



U.S. Fish & Wildlife Service

Maine Coastal Islands National Wildlife Refuge

Final Comprehensive Conservation Plan

April 2005



Cover Photos: Cross Island, looking toward Inner and Outer Double Head Shot Islands, *USFWS*



This goose, designed by J.N. "Ding" Darling, has become a 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 95-million acre National Wildlife Refuge system comprised of more than 545 national wildlife refuges and thousands of waterfowl production areas. It also operates 65 national fish hatcheries and 78 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 Aid 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

Maine Coastal Islands National Wildlife Refuge

(formerly Petit Manan National Wildlife Refuge Complex)

Final Comprehensive Conservation Plan

April 2005

U.S. Fish and Wildlife Service
Refuge Headquarters
P.O. Box 279, Water Street
Milbridge, ME 04658-0279

Maine Coastal Islands National Wildlife Refuge
Final Comprehensive Conservation Plan
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Abstract

Type of action: Administrative
Lead agency: U.S. Department of the Interior,
Fish and Wildlife Service
Responsible official: Marvin Moriarty, Regional Director, Region 5
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This Comprehensive Conservation Plan (CCP) for the Maine Coastal Islands National Wildlife Refuge (Refuge) is the culmination of an intensive planning process involving State and local partners, Refuge neighbors, private landowners, and the local community. The direction in this CCP includes an expansion of the Petit Manan Refuge unit by 2,459 acres beyond its current approved boundary. The expansion includes 87 nationally significant seabird, wading bird, and bald eagle coastal nesting islands and 153 acres of wetlands on the mainland. This CCP also adds six new seabird restoration projects to our present six, and intensifies the focus of our biological programs on birds of high conservation priority in the Gulf of Maine. It increases opportunities for wildlife-dependent recreation, especially in our environmental education and interpretive programs, builds new trails on the Gouldsboro Bay, Sawyers Marsh, and Corea Heath divisions, and opens the Petit Manan Point Division to deer hunting. It also recommends that 13 Refuge islands in 8 wilderness study areas be included in the National Wilderness Preservation System.

Table of Contents

	Page
Chapter 1 Purpose and Need for Action	
Introduction	1-2
Purpose and Need for Plan	1-3
Project Area	1-4
Service Policies, Mandates, and National and Regional Conservation Plans Guiding the Project	1-4
Refuge Purposes and Land Acquisition Authority	1-8
Refuge Vision Statement	1-10
Refuge Goals	1-12
Chapter 2 Planning Process	
The Comprehensive Conservation Planning Process	2-2
Issues Outside the Scope of this EIS	2-17
Chapter 3 Refuge and Resource Descriptions	
Part One: The Refuge Landscape	3-2
Landscape-level Features	3-2
Socio-economic Characteristics of Coastal Maine	3-9
Refuge Administration	3-20
Wilderness Management	3-30
Cultural and Historic Resources	3-30
Part Two: Refuge Island Resources	3-34
Islands Overview	3-34
Threatened and Endangered Species (Federal-listed)	3-34
Seabirds	3-36
Waterfowl	3-40
Other Resident Wildlife	3-41
Island Vegetation	3-42
Individual Island Descriptions	3-42
Other Islands Affiliated with the Refuge Complex	3-76
Part Three: Refuge Mainland Resources	3-105
Petit Manan Point Division	3-105
Gouldsboro Bay Division	3-109
Sawyers Marsh Division	3-113
Corea Heath Division (pending transfer from the U.S. Navy)	3-117
Chapter 4 Management Direction	
Introduction	4-2
General Refuge Management	4-3
Refuge Goals, Objectives and Strategies	4-6

Chapter 5 Implementation	Page
Refuge Staffing	5-2
Refuge Funding Needs	5-2
Existing Refuge Operational Plans ("Step-down plans)	5-4
Compatibility Determinations	5-6
Monitoring and Evaluation	5-6
Additional NEPA Analysis	5-7
Adaptive Management	5-7
Plan Amendment and Revision	5-8

Appendices

Appendix A – Land Protection Plan	A-1
Appendix B – Species and Habitats of Conservation Concern	B-1
Appendix C – Compatibility Determinations	C-1
Appendix D– Wilderness Inventory and Study	D-1
Appendix E – List of Preparers	E-1
Appendix F – Refuge Operations Needs System (RONS) and Management Maintenance System (MMS)	F-1

**Glossary and
Literature Cited**

Glossary	Glossary-1
Literature Cited	Literature-1

List of Tables

1-1	History of acquisition at Petit Manan Refuge	1-11
1-2	History of acquisition at Cross Island Refuge	1-11
3-1	Populations of eight coastal Maine counties	3-10
3-2	Aquaculture operations in Maine under lease as of June 2004	3-11
3-3	Distribution of coastal excursion companies	3-14
3-4	Refuge budgets from 1998 to 2004	3-23
3-5	Refuge revenue sharing payments in fiscal year 2002	3-23
3-6	Rare plants documented on Refuge Islands	3-43
3-7 through 3-37	Nesting seabird species, number of pairs, (and year) observed on:	
3-7	Smuttynose Island	3-45
3-8	Upper Flag Island	3-46
3-9	Ram Island	3-46
3-10	Pond Island	3-47
3-11	Lower Mark Island	3-48
3-12	Outer Heron Island	3-48
3-13	Outer White Island	3-49
3-14	Inner White Island	3-50
3-15	Little Thrumcap Island	3-51

	Page
3-16 Crane Island	3-51
3-17 Franklin Island	3-52
3-18 Metinic Island	3-53
3-19 Two Bush Island	3-54
3-20 Mantinicus Rock	3-55
3-21 Seal Island	3-57
3-22 Roberts Island	3-58
3-23 Little Roberts Island	3-58
3-24 Bar Island	3-59
3-25 Eastern and Western Barge Islands	3-60
3-26 Ship Island	3-61
3-27 Trumpet Island	3-62
3-28 John's Island	3-63
3-29 Egg Rock Island	3-64
3-30 Petit Manan Island	3-66
3-31 Nash Island	3-68
3-32 Inner Sand Island	3-68
3-33 Eastern Brothers Island	3-71
3-34 Libby Island	3-72
3-35 Old Man Island	3-73
3-36 Outer Double Head Shot Island	3-74
3-37 Machias Seal Island	3-77
3-38 Petit Manan Point Division cover types by acres	3-104
3-39 Gouldsboro Bay Division habitat cover types by acres ...	3-107
3-40 Sawyers Marsh Division cover types by acres	3-114
3-41 Corea Health Division habitat cover types by acres	3-118
3-42 Summary of cover types by location on the Refuge	3-121
4-1 Land acquisition summary	4-100

List of Figures

2-1	Steps in the comprehensive conservation planning process and their relationship to National Environmental Policy Act compliance	2-3
5-1	Recommended refuge staffing	5-2

List of Maps

1-1	Gulf of Maine Watershed	1-5
1-2	Maine Coastal Islands National Wildlife Refuge	1-13
1-3	Kittery	1-14
1-4	Saco Bay	1-15
1-5	Casco Bay	1-16
1-6	Muscongus Bay	1-17
1-7	Outer Penobscot Bay	1-18
1-8	Inner Penobscot Bay	1-19

	Page
1-9 Jericho Bay	1-20
1-10 Frenchman Bay	1-21
1-11 Petit Manan	1-22
1-12 Cobscook Bay	1-23
3-1 Smuttynose and Malaga Islands	3-78
3-2 Upper Flag Island	3-79
3-3 Ram Island	3-80
3-4 Pond Island National Wildlife Refuge	3-81
3-5 Lower Mark Island	3-82
3-6 Outer Heron, Inner White and Outer White Islands	3-83
3-7 Little Thrumcap Island	3-84
3-8 Franklin Island National Wildlife Refuge and Crane Island	3-85
3-9 Metinic Island	3-86
3-10 Two Bush Island	3-87
3-11 Matinicus Rock	3-88
3-12 Seal Island National Wildlife Refuge	3-89
3-13 Roberts and Little Roberts Islands	3-90
3-14 Little Marshall Island	3-91
3-15 Johns Island	3-92
3-16 Bar, Ship and Trumpet Islands, East and West Barges	3-93
3-17 Egg Rock	3-94
3-18 Petit Manan Island	3-95
3-19 Sally and Abbott Islands	3-96
3-20 Bois Bubert Island	3-97
3-21 Nash and Inner Sand Islands	3-98
3-22 Halifax, Schoppee and Eastern Brother Islands	3-99
3-23 Libby Island	3-100
3-24 Cross Island National Wildlife Refuge	3-101
3-25 Machias Seal Island	3-102
3-26 Petit Manan Point Division and Bois Bubert Island	3-107
3-27 Petit Manan Point Division and Bois Bubert Island Cover Types	3-108
3-28 Gouldsboro Bay Division	3-111
3-29 Gouldsboro Bay Division cover types	3-112
3-30 Sawyers Marsh Division	3-115
3-31 Sawyers Marsh Division cover types	3-116
3-32 Corea Health Division	3-119
3-33 Corea Health Division habitat cover types	3-120
4-1 Corea Health Division Public Use	4-71
4-2 Gouldsboro Bay Division Public Use	4-72
4-3 Petit Manan Point Division Public Use	4-73
4-4 Sawyers Marsh Division Public Use	4-74

Chapter 1



John Hollingsworth Memorial Trail Shoreline, Petit Manan Point Division
USFWS photo

The Purpose of and Need for Action

- Introduction
- The Purpose of and Need for Action
- Project Area
- Service Policies, Mandates, and National and Regional Conservation Plans Guiding the Project
- Refuge Purposes and Land Acquisition History
- Refuge Vision Statement
- Refuge Goals

Introduction

The Maine Coastal Islands National Wildlife Refuge (Refuge) is comprised of five individual refuge units which span the coast of Maine and support an incredible diversity of habitats including, coastal islands, forested headlands, estuaries and freshwater wetlands. The Comprehensive Conservation Plan (CCP) for this refuge was prepared pursuant to the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 6688dd et seq.). It is the culmination of a planning process that began in 1993. Meetings with the public, State agencies, commercial industry representatives, landowners, and conservation partners were held to identify and evaluate management alternatives. A draft and final Environmental Impact Statement (EIS) were previously distributed for public review and comment. These documents describe other management alternatives we considered for implementation.

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

This document has five chapters and six appendices. Chapter 1 is the “Purpose of and Need for Plan” and it sets the stage for Chapters 2 through 5. It...

- describes the purpose and need for a CCP for the refuge;
- identifies national and regional mandates and plans that influenced this document;
- highlights the purposes for which each of the five refuge units in this Refuge was established and presents their respective land acquisition histories; and,
- presents the vision and goals for the Refuge;

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

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

Chapter 4, “Management Direction”, presents the goals, objectives and strategies that will guide decision-making and land management.

Chapter 5, “Implementation” outlines our staffing and funding needs to accomplish the management direction.

The Purpose of and Need for Plan

A CCP's *purpose* is to provide strategic management direction on a refuge for the next 15 years by:

- providing a clear statement of desired future conditions for habitat, wildlife, visitor services, staffing, and facilities;
- providing State agencies, Refuge neighbors, visitors, and partners with a clear explanation of the reasons for management actions;
- ensuring refuge management reflects the policies and goals of the Refuge System and legal mandates;
- ensuring the “compatibility” of current and future public use;
- providing long-term continuity and direction for refuge management; and,
- providing direction for staffing, operations, maintenance, and annual budget requests.

The present *need* to develop this CCP is many-fold. First, the 1997 National Wildlife Refuge System Improvement Act (Refuge Improvement Act) requires that all national wildlife refuges have CCPs in place by 2012 to help fulfill the mission of the Refuge System.

Second, this refuge lacks a master plan to accomplish the actions noted above in an environment that has changed dramatically since the refuge units were first established. For example, its island holdings have more than tripled, significant mainland acquisition has also occurred, staffing has increased, a second office has opened, pressures for increasing public access continue to grow, and new ecosystem and species plans have been developed with direct bearing on refuge management.

Third, we want to pursue a new Refuge Headquarters and Coastal Education Center. Proposed site criteria are presented in Chapter 3 under “Refuge Administration”.



Petit Manan Island
USFWS photo

Fourth, we have developed strong partnerships, vital to our continued successes. State agencies in Maine, Tribal governments, private landowners, the public, and our conservation partners were actively engaged in this plan's development. We feel it is our responsibility to clearly develop our priorities through this plan.

Finally, we need a CCP to guide us in future land protection that promotes the conservation of nationally significant coastal habitats and Federal trust species.

All of these reasons clearly underscore the need for the strategic direction provided in a CCP.

Project Area

The Refuge lies within the Gulf of Maine Watershed in the State of Maine (Map 1-1), and stretches along the entire 200 air-miles of the Maine coastline, from approximately the New Hampshire border, down east to Cobscook Bay (Refer to Maps 1-2 to 1-12 at end of chapter).

It is comprised of five separate refuge units: Cross Island, Petit Manan, Seal Island, Franklin Island, and Pond Island national wildlife refuges. Each has separate establishment histories and refuge purposes as described below, but they are referred to collectively as the “Maine Coastal Islands National Wildlife Refuge”. Seal, Franklin, and Pond islands are single-island refuges. Cross Island Refuge is a six-island complex, while Petit Manan Refuge includes 33 islands and 3 mainland divisions, including: Petit Manan Point (2,195 acres), Sawyers Marsh (933 acres), and Gouldsboro Bay (607 acres) divisions. One additional division, Corea Heath (400 acres), is a pending transfer from the U.S. Navy.

All totaled, the Refuge includes approximately 7,961 acres of diverse coastal Maine habitats including forested and non-forested offshore islands, coastal salt marsh, open field, and upland mature spruce-fir forest. The acreage is considered approximate because of the variability in the accuracy of our sources. We use surveyed acres, the most accurate, where available; otherwise, we may use less accurate deed acres or GIS-generated mapping acres. Also, it is important to note that Service acquisition of approved islands has been on-going during development of this final CCP. Refuge Headquarters should be contacted to obtain the most up-to-date ownership information.

Service Policies, Mandates, and National and Regional Conservation Plans Guiding the Project

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

The U.S. Fish and Wildlife Service (Service) administers the Refuge System. The Service is part of the Department of Interior. Its 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.”

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

By law, Congress entrusts national resources to the Service for conservation and protection: migratory birds and fish, Federal-listed endangered and threatened species, inter-jurisdictional fishes, wetlands, certain marine mammals, and national wildlife refuges. The Service also enforces Federal wildlife laws and international treaties on importing and exporting wildlife, assists with state fish and wildlife programs, and helps other countries develop wildlife conservation programs.

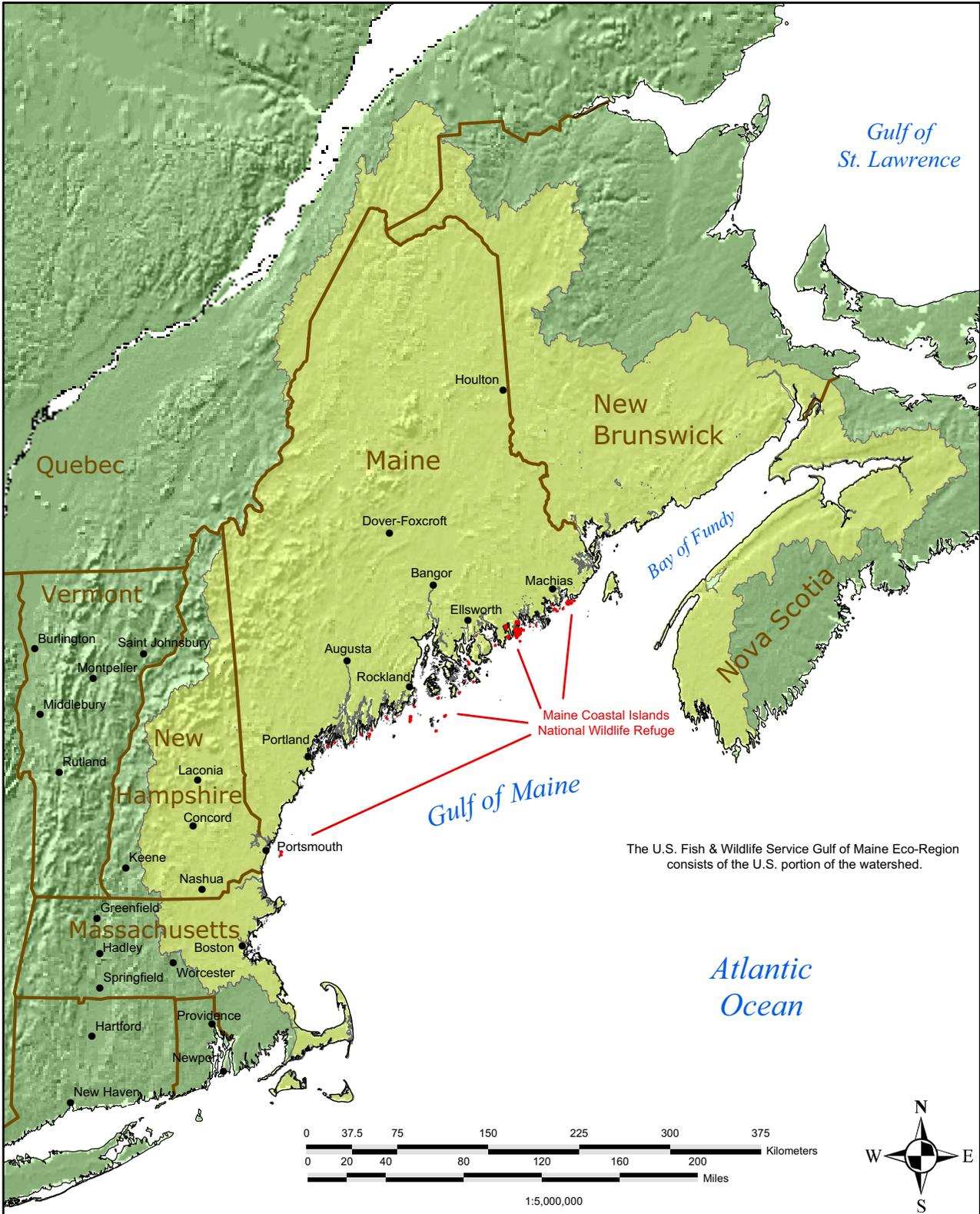
The Service manual contains the standing and continuing directives to implement its authorities, responsibilities, and activities. This manual can be accessed at:

<http://www.fws.gov.directives/direct.html>



MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Gulf of Maine Watershed



Special Service directives which affect the rights of citizens or the authorities of other agencies are published separately in the Code of Federal Regulations (CFR) and are not duplicated in the Service manual. Most of the current regulations that pertain to the Service are issued in 50 CFR parts 1-99. CFRs can be accessed at:

<http://www.access.gpo.gov/nara/cfr/index.html>

The National Wildlife Refuge System and Its Mission

The National Wildlife Refuge System (Refuge System) is the world's largest collection of lands and waters set aside specifically for the conservation of wildlife and ecosystem protection. Over 545 national wildlife refuges are part of the national network today. They encompass more than 95 million acres of lands and waters in all 50 states and several island territories. More than 40 million visitors hunt, fish, observe and photograph wildlife, or participate in environmental education and interpretive activities on refuges across the nation each year.

The 1997 Refuge Improvement Act established a unifying mission for the Refuge System; a new process for determining compatible public use activities on refuges; and, the requirement to prepare CCPs for each refuge. The Act states that first and foremost, the Refuge System must focus on wildlife conservation. It further states that the Refuge System mission, 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.”
(Refuge Improvement Act; Public Law 105-57)

The Refuge Improvement Act declares that all existing or proposed refuge uses must be “compatible” with the refuge’s purpose and consistent with public safety. “Compatibility” is determined by the refuge manager after evaluating an activity’s potential effect on refuge resources and determining it supports the Refuge System mission and does not interfere with or detract from the refuge purposes and goals. Six wildlife-dependent public uses were designated in the legislation to receive enhanced consideration on refuges and in CCPs. The six priority uses are: hunting, fishing, environmental education and interpretation, and wildlife observation and photography.

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

Fulfilling the Promise

This report on the Refuge System is the culmination of a year-long process involving teams of Service employees who examined the Refuge System within the framework of Wildlife and Habitat, People and Leadership. The report was the result of the first-ever System Conference held in Keystone, Colorado in October 1998, attended by every refuge manager in the country, other Service employees, and scores of conservation organizations. The heart of the report is the collection of vision statements and 42 recommendations. Many “Promises Teams” have been formed to develop strategies for implementing the recommendations. We utilized information from such teams as Wildlife and Habitat, Goals and Objectives, Strategic Growth of the Refuge System, Invasive Species, and Inventory and Monitoring. Their recommendations helped guide the development of goals, strategies and actions in this CCP.

Other Mandates

While Service and Refuge System policy and each refuge’s purpose provide the foundation for management, national wildlife refuges are administered consistent with a variety of other Federal laws, executive orders, treaties, interstate compacts, and regulations pertaining to the conservation and protection of natural and cultural resources. The *Digest of Federal Resource Laws of Interest to the USFWS* lists them and can be accessed at:

<http://laws.fws.gov/lawsdigest/indx.html>

National and Regional Plans and Conservation Initiatives Guiding Project

As we describe in detail in the Final EIS, we utilized the following plans in developing our CCP goals and objectives:

- North American Waterfowl Management Plan (NAWMP; update 2004)
- The Black Duck Joint Venture Plan (Final Draft - Strategic Plan, April 1993)
- North American Waterbird Conservation Plan (Version 1, 2002)
- U.S. Shorebird Conservation Plan (2001 Update)
- Northern Atlantic Regional Shorebird Plan (Draft 2002)
- Regional Wetlands Concept Plan – Emergency Wetlands Resources Act (1990)
- Roseate Tern Recovery Plan, Northeastern Population (First Update 1998)
- Northern States Bald Eagle Recovery Plan (1983)
- Partners In Flight Landbird Conservation Plans
 - Physiographic Area 27 - Northern New England (Draft October 2000)
 - Physiographic Area 28 - Eastern Spruce-Hardwood Forest (Draft June 2000)
- Tern Management Plan (June 2002)
- Birds of Conservation Concern 2002 Report

- Bird Conservation Region Blueprint; BCR 14 - Atlantic Northern Forest (draft 2003)
- Gulf of Maine Rivers Ecosystem Plan (1994)
- Maine Coastal Nesting Islands Project (on-going)
- Maine Department of Inland Fisheries and Wildlife Species Assessments (on-going)

Refuge Purposes and Land Acquisition History

As described above under the section titled “Project Area,” the Refuge spans the entire Maine coastline. It includes lands in the towns of Cutler, Machiasport, Jonesport, Roque Bluffs, Addison, Milbridge, and Steuben in Washington County; the towns of Gouldsboro, Winter Harbor, Swan’s Island, Tremont in Hancock County; the towns of Vinalhaven, Saint George, and Friendship in Knox County; the towns of Boothbay, South Bristol, and Southport in Lincoln County; the town of Phippsburg in Sagadahoc County; the town of Harpswell in Cumberland County; and the town of Kittery in York County. The Refuge Headquarters is currently located in Milbridge, with a staffed, satellite office in Rockport.

The Service has acquired lands for the Refuge through a variety of acquisition methods. These include gifts from private individuals, land trusts, statewide and national conservation groups, and transfers of title from the U.S. Coast Guard and U.S. Navy. In addition, when funds are available, we have purchased through fee title acquisition or conservation easement, important mainland tracts and nationally significant coastal nesting islands.

All acquisitions have been from willing sellers or donors. With approval of this CCP, we obtained permission from our Director to expand the boundary of the Petit Manan Refuge. The former boundary and the new boundary are described in our Land Protection Plan (Appendix A).



Cross Island with Double Head Shot islands in the background
USFWS photo

Historically, our land acquisition funds come from two sources: the Land and Water Conservation Fund, appropriated annually by Congress, and the Migratory Bird Conservation Fund, which is replenished through the sale of Federal duck stamps. Annual expenditures for the Refuge land acquisition program have recently averaged approximately \$1 million/year.

The rate of our coastal island acquisition began a steady increase in 1993, and since that time, the Service has acquired an interest in 31 islands. All of these have become part of this Refuge, although they may lie closer to Rachel Carson or Moosehorn refuges. This allows us to concentrate our expertise and the logistical resources needed to manage seabirds on off-shore islands.

The purpose and land acquisition history for each of the five individual refuge units within the Refuge are presented below. All acreages presented are rounded to the nearest whole number and represent U.S. Geological Survey (USGS) land acres above the mean high water mark.

Seal Island National Wildlife Refuge

This refuge is 65 acres and was established in 1972 because of its “...particular value in carrying out the national migratory bird management program.” It was established under authority of 16 U.S.C. 667b, an Act Authorizing the Transfer of Certain Real Property for Wildlife or Other Purposes, 16 U.S.C.667b-667d, as amended. It was acquired in transfer from the U.S. Navy.

Franklin Island National Wildlife Refuge

This refuge is 12 acres and was established in 1973 because of its “...particular value in carrying out the national migratory bird management program.” It was established under authority of 16 U.S.C. 667b, an Act Authorizing the Transfer of Certain Real Property for Wildlife or Other Purposes, 16 U.S.C.667b-667b, as amended. It was acquired in transfer from the U.S. Coast Guard.

Pond Island National Wildlife Refuge

This refuge is 10 acres and was established in 1973 because of its “...particular value in carrying out the national migratory bird management program.” It was established under authority of 16 U.S.C. 667b, an Act Authorizing the Transfer of Certain Real Property for Wildlife or Other Purposes, 16 U.S.C.667b-667d, as amended. It was acquired in transfer from the U.S. Coast Guard.

Petit Manan National Wildlife Refuge

This refuge is currently 5,771 acres and consists of 33 islands and three mainland divisions. The fourth mainland division, Corea Heath, is a pending U.S. Department of Navy transfer. This Refuge was originally established in 1974 “...for use as an inviolate sanctuary, or any other management purposes, for migratory birds.” It was established under authority of the Migratory Bird Conservation Act, 16 U.S.C. 715d. In addition to the Migratory Bird Conservation Act, the succession of islands and mainland parcels acquired after 1974 were acquired with one or more of the following purposes:

“...suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species” (Refuge Recreation Act, 16 U.S.C. 460k-1); or

“...particular value in carrying out the national migratory bird management program” (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes, 16 U.S.C. 667b-667d)

“...the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions...” (Emergency Wetlands Resource Act of 1986, 16 U.S.C. 3901(b), 100 Stat. 3583).

Its acquisition history is described in Table 1-1.

**Cross Island National
Wildlife Refuge**

This six-island refuge is 1,703 acres and was established in 1980 “...for use as an inviolate sanctuary, or any other management purposes, for migratory birds.” It was established under authority of the Migratory Bird Conservation Act, 16 U.S.C. 715d.

Its acquisition history is described in Table 1-2.

**Refuge Vision
Statement**

Very early in our planning process our team developed this vision statement to provide a guiding philosophy and sense of purpose for our planning effort.

“We envision the future Maine Coastal Islands National Wildlife Refuge epitomizing the mission of the National Wildlife Refuge System; conserving in perpetuity an incredibly rich tapestry of coastal islands, intertidal estuaries, freshwater wetlands, maritime forests and open fields; and, enabling nesting and migrating seabirds, and other wildlife of conservation concern in the Gulf of Maine, to thrive here.

With the help of our conservation partners, we will apply sound, scientific principles and adaptive management strategies to sustain the long-term health and integrity of coastal Maine habitats; expand community outreach and environmental education and interpretation programs; and, stimulate visitors to embrace stewardship of natural resources.”



Lighthouse on Libby Island
USFWS photo

Table 1-1 History of acquisition at Petit Manan Refuge

Calendar Year*	Acres**	Acquisition Method	Parcel Acquired
1974	10	transfer of island from Coast Guard	Petit Manan Is.
1976	2,166	3 donations, 2 fee purchases, and 1 transfer; includes both islands and mainland	Petit Manan Pt Div.
1978	5	1 island transfer from Coast Guard	Little Nash Is (portion of)
1979	1,130	1 donation of an island	Bois Bubert Is (portion of)
1987	25	1 land exchange for tract on mainland	Bois Bubert Is (portion of)
1992	13	1 donation of tract on mainland	Sawyers Marsh Division (portion of)
1993	33	2 fee purchases; 1 island, and one tract on mainland	Bois Bubert Is (portion of)
1994	252	3 donations and 3 fee purchase; includes both islands and mainland	Metinic (portion of), E&W Barge, Bar, Ship and Trumpet Is; Goulds. Bay Div (portion of)
1995	322	2 donations and 7 fee purchase; includes both islands and mainland	Metinic (portion of), Halifax, Outer White, Lt Roberts, Roberts, Lt Thrumcap Is; Goulds. Bay Div (portion of)
1996	31	2 donations and 1 fee purchase; includes both mainland and islands	Metinic (portions of), and Abbot, Sally Is
1997	12	2 fee purchases of islands	Bois Bubert Is (portion of); E Brothers Is
1998	1008	2 donations and 4 fee purchases; includes both islands and mainland, and 2 conservation easements	Upper Flag, John's Is; Sawyers Marsh Div (portion of), and Goulds. Bay Div (portion of); Inner White Is (easement) and Lower Mark Is (easement)
1999	187	4 islands transferred from Coast Guard, and 3 fee purchases of islands	Ram, Lt. Libby, Inner Sand, Matinicus Rock, Two Bush, Outer Heron Is, and Egg Rock
2000	39	3 fee purchases; includes both island and mainland	Schoppee and Lt Marshall Is; Goulds. Bay Div (portion of)
2001	366	2 fee purchases; includes both islands and mainland, and 1 conservation easement on an island	Crane Is (easement); Sawyers Marsh and Goulds. Bay Div (portions of)
2002	60	2 conservation easements on islands	Smuttynose and Malaga Is (easements)

* Acquisition is ongoing; check with the Refuge Headquarters for latest island purchases.

** Island acres are approximate, as many were not surveyed, but are based on original deed acres or GIS mapping.

Table 1-2 History of acquisition at Cross Island Refuge

Calendar Year	Acres*	Acquisition Method	Parcel Acquired
1980	1,538	donation of 6 islands	Cross Is (portion of); Old Man, Mink, Outer and Inner Double Head Shot, Scotch Is.
1986	165	land exchange for tract on island	Cross Is (portion of)

* Island acres are approximate, as many were not surveyed, but are based on original deed acres or GIS mapping.

Refuge Goals

These goals were developed after consideration of our refuge purposes, the Service and Refuge System missions, our vision, and the mandates, plans, and conservation initiatives described above. They are intentionally broad, descriptive statements of purpose. They highlight elements of our vision statement that are emphasized in future refuge management. The biological goals take precedence, in particular Goal 5, but otherwise, the goals are not presented in a particular order.

Goal 1: Perpetuate the biological diversity and integrity of upland communities on the Refuge's mainland properties to sustain high quality habitat for migratory birds.

Goal 2: Maintain high quality wetland communities on the Refuge's mainland properties, primarily to benefit migratory birds of high conservation priority, while also supporting other native, wetland-dependent species of concern.



Atlantic puffin
USFWS photo

Goal 3: Perpetuate the biological diversity and integrity of upland communities on the Refuge's islands to sustain high quality habitat for nesting bald eagles and migratory songbirds and raptors, and to protect rare plant sites.

Goal 4: Protect the high quality wetland communities on the Refuge's islands to benefit nesting and migrating shorebirds and waterfowl.

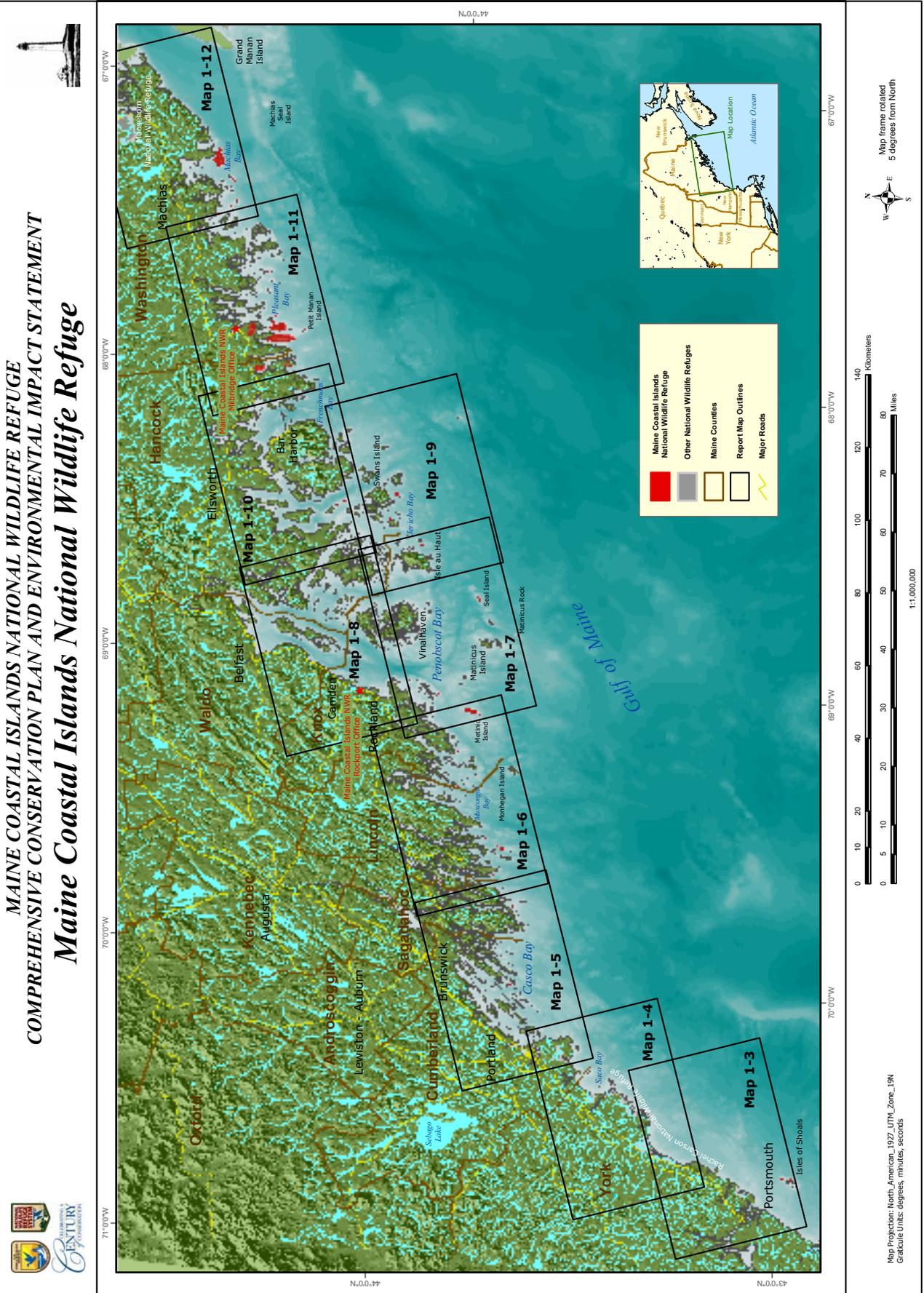
Goal 5: Protect and restore nesting seabird populations on the Refuge's islands to contribute to regional and international seabird conservation goals.

Goal 6: Promote enjoyment and stewardship of coastal Maine wildlife and their habitats by providing priority, wildlife-dependent recreational and educational opportunities.

Goal 7: Protect the integrity of coastal Maine wildlife and habitats through an active land acquisition and protection program.

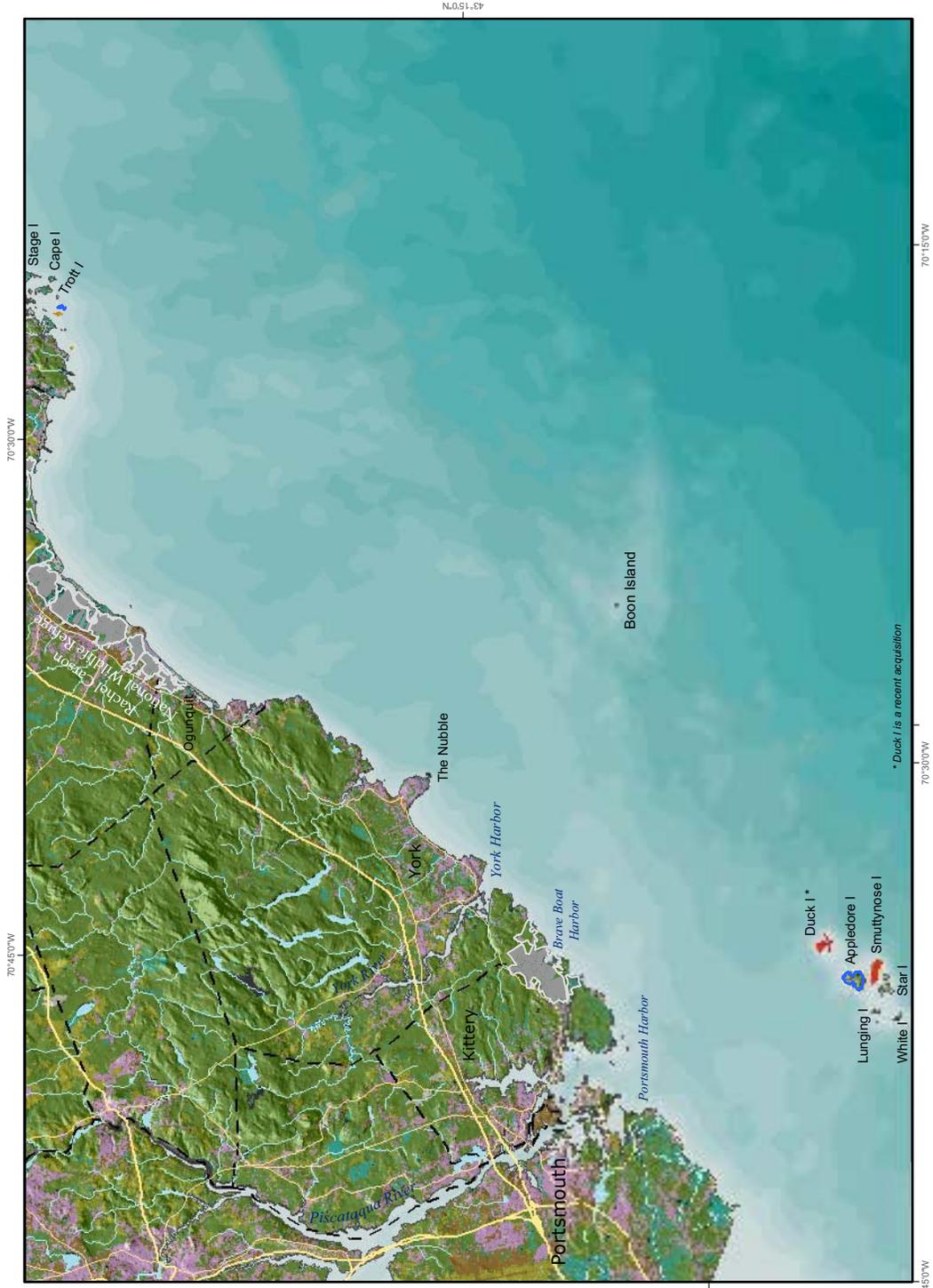
Goal 8: Communicate and collaborate with local communities, Federal, State, local, and Tribal representatives, and other organizations throughout coastal Maine to further the mission of the National Wildlife Refuge System.

Map 1-2



**MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT**

Map 1-3 Kittery



- Land Protection Legend**
- Maine Coastal Islands
 - National Wildlife Refuge
 - Maine Coastal Islands
 - National Wildlife Refuge Approved for Acquisition
 - Nationally Significant Islands* Permanently Protected by Others
 - Nationally Significant Islands* Not Permanently Protected
 - Nationally Significant Bald Eagle Nest Sites* Not Permanently Protected
 - Other National Wildlife Refuges

*Nationally significant is defined by criteria developed in concert with the National Wetlands Inventory Program, and the National Wetlands Inventory Program. Specific criteria used to determine national significance identified in Chapter 1 of the CCPEIS.

- Base Map Legend**
- Primary Roads
 - Secondary Roads
 - Town Lines
 - Fresh Water

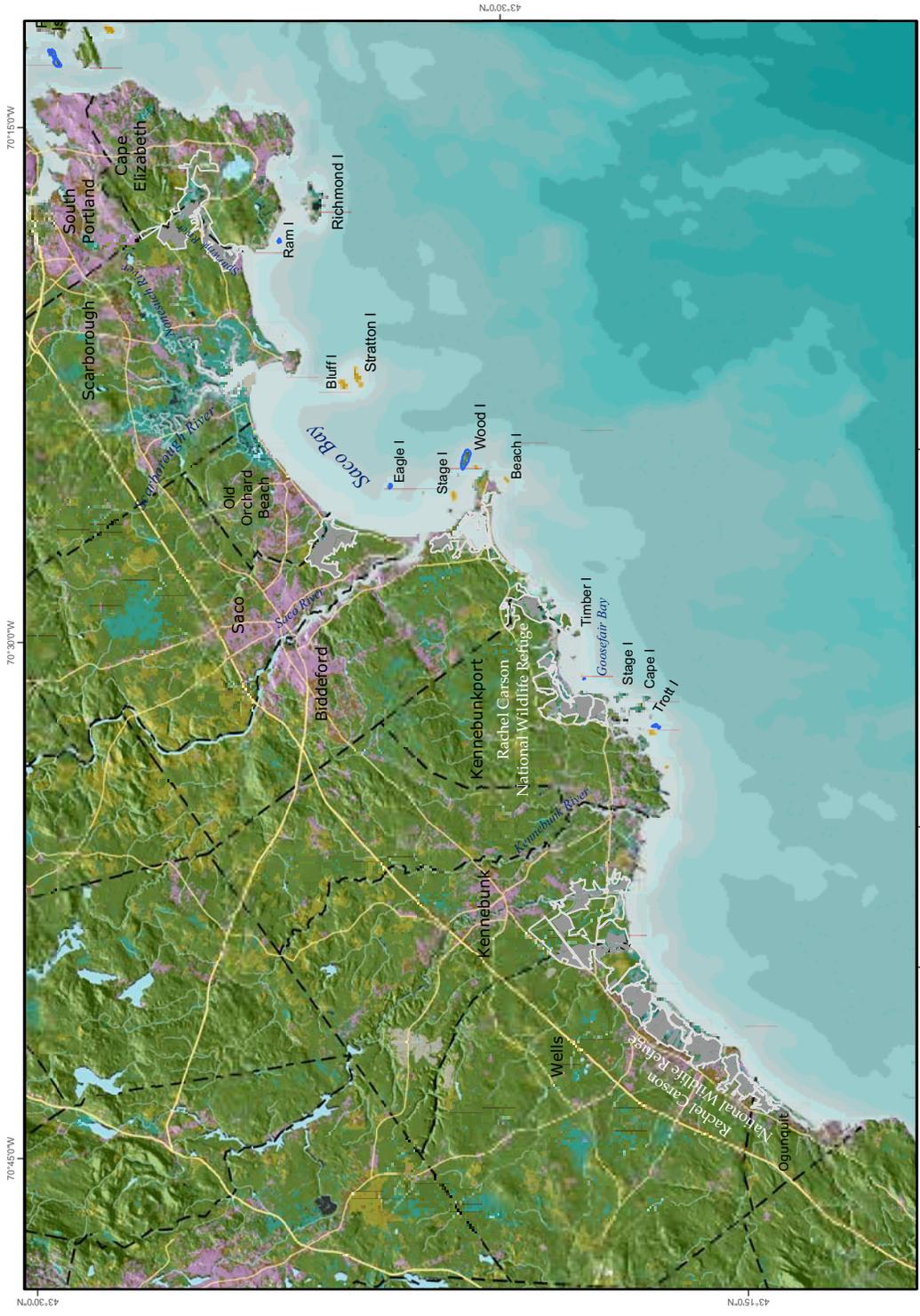
- National Land Cover Database**
- Residential
 - Commercial, Industrial or Transportation
 - Bare Rock or Barren Land
 - Forested
 - Grassland
 - Wetland

Data sources:
National Land Cover Database from the US EPA
Digital Elevation Model from USGS NED data
Town lines adapted from Maine Office of GIS data
All National Wildlife Refuge boundaries from USFWS
Bathymetry from MassGIS
Map produced by USFWS RSCarto 2/23/2005

Map Projection: North American 1927 UTM Zone 18N
Graphic Units: degrees, minutes, seconds

Map frame rotated 19 degrees from North

MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT
Map 1-4 Saco Bay



70°45'00"W 70°30'00"W 70°15'00"W 70°00'00"W
 43°30'00"N 43°15'00"N 43°00'00"N

- Land Protection Legend**
- Maine Coastal Islands National Wildlife Refuge
 - Maine Coastal Islands National Wildlife Refuge Approved for Acquisition
 - Nationally Significant Islands* Permanently Protected by Others
 - Nationally Significant Islands* Not Permanently Protected
 - Nationally Significant Bald Eagle Nesting Sites* Not Permanently Protected
 - Other National Wildlife Refuges

* Nationally significant is defined by criteria developed in partnership with Gulf of Maine Program, Maine Dept. of Inland Fisheries & Wildlife and conservation partners. Specific criteria used to determine significance identified in Chapter 1 of the CCP/EIS.

- Base Map Legend**
- Primary Roads
 - Secondary Roads
 - Town Lines
 - Fresh Water

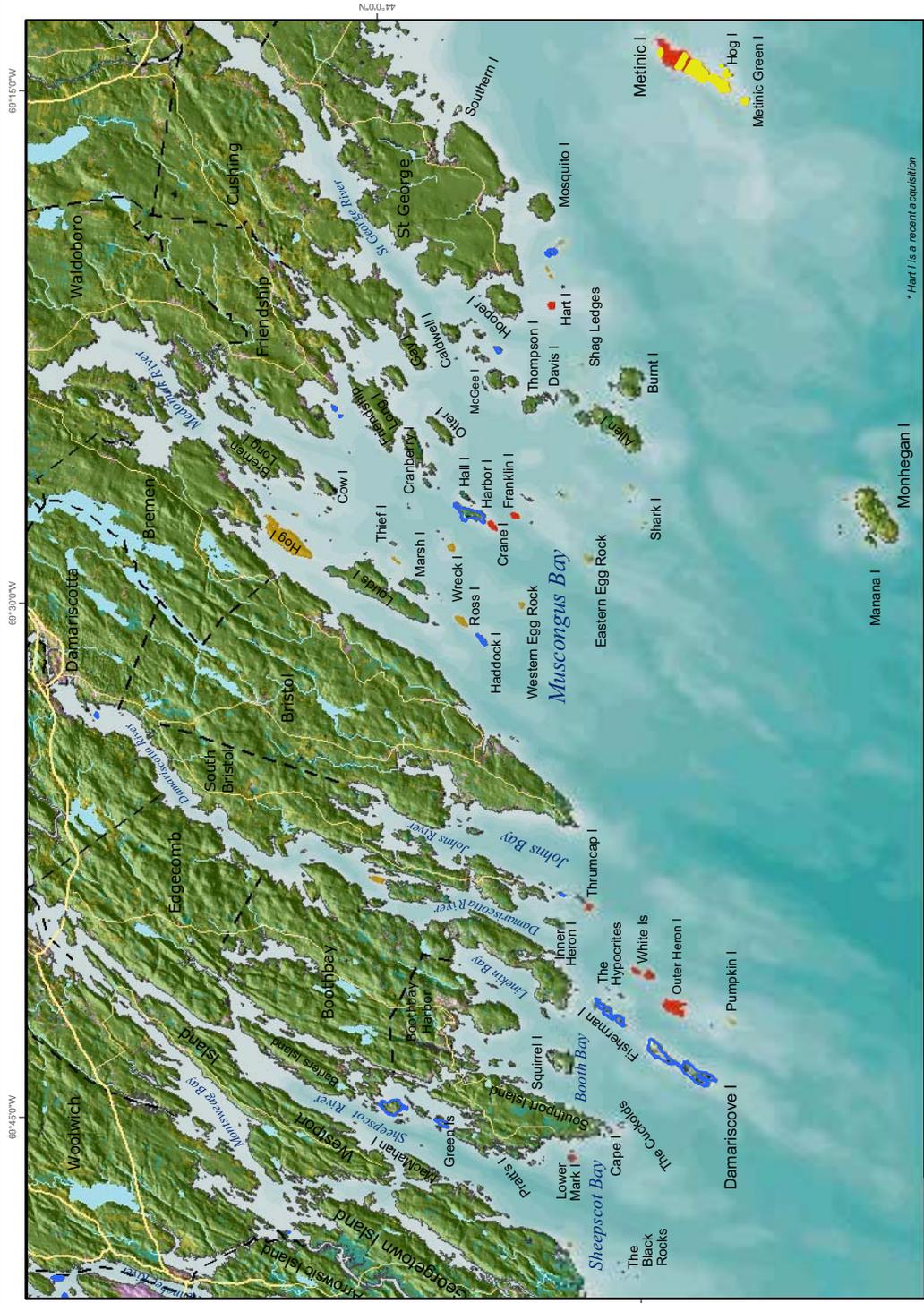
- National Land Cover Database**
- Residential
 - Commercial, Industrial or Transportation
 - Bare Rock or Barren Land
 - Forested
 - Grassland
 - Wetland

Data sources:
 National Land Cover Database from the US EPA
 National Wetlands Inventory from US Fish and Wildlife Service
 Roads from USGS 1:100,000 road data
 Town lines adapted from Maine Office of GIS data
 All National Wildlife Refuge boundaries from USFWS
 Municipality from Maine GIS
 Map produced by USFWS RSCarto 1/6/2005



Map Projection: North American 1927 UTM Zone 19N
 Graticule Units: degrees, minutes, seconds
 0 2.5 5 10 15 20 25 30 Kilometers
 0 2.5 5 10 15 20 Miles
 Map frame rotated 19 degrees from North

MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT
Map 1-6 Muscongus Bay



- Land Protection Legend**
- Maine Coastal Islands National Wildlife Refuge
 - Maine Coastal Islands National Wildlife Refuge Approved for Acquisition
 - Nationally Significant Islands* Permanently Protected by Others
 - Nationally Significant Islands* Not Permanently Protected
 - Nationally Significant Bald Eagle Nesting Sites* Not Permanently Protected
 - Other National Wildlife Refuges

Nationally significant is defined by others developed in partnership with GUL of Maine Program, Maine Dept. of Inland Fisheries & Wildlife and conservation partners. Specific criteria used to determine national significance identified in Chapter 1 of the CCP/EIS.

- Base Map Legend**
- Primary Roads
 - Secondary Roads
 - Town Lines
 - Fresh Water

- National Land Cover Database**
- Residential
 - Commercial, Industrial or Transportation
 - Bare Rock or Barren Land
 - Forested
 - Grassland
 - Wetland

Data sources:
 National Land Cover Database from the US EPA
 Digital Elevation Model from the USGS
 National Wetlands Inventory from the USGS
 USGS 1:250,000 scale topographic data
 Town lines edged from Maine Office of GIS data
 All National Wildlife Refuge boundaries from USFWS
 Bathymetry from MassGIS
 Map produced by USFWS RC/Caro 2/23/2005

Map Projection: North American 1927 UTM Zone 19N
 Graticule Units: degrees, minutes, seconds

0 2.5 5 10 15 20 25 30
 Kilometers

0 2.5 5 10 15 20
 Miles

Map frame rotated 19 degrees from North

MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Map 1-7 Outer Penobscot Bay



Land Protection Legend

- Maine Coastal Islands
- National Wildlife Refuge
- Maine Coastal Islands
- National Wildlife Refuge
- Approved for Acquisition
- Nationally Significant Islands*
- Permanently Protected by Others
- Nationally Significant Islands*
- Not Permanently Protected
- Nationally Significant Bald Eagle
- Not Permanently Protected
- Other National Wildlife Refuges

*Nationally significant is defined by criteria developed in partnership with Gulf of Maine Program, conservation partners. Specific criteria used to determine national significance identified in Chapter 1 of the CCP/EIS.

Base Map Legend

- Primary Roads
- Secondary Roads
- Town Lines
- Fresh Water

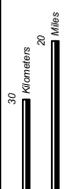
National Land Cover Database

- Residential
- Commercial, Industrial or Transportation
- Bare Rock or Barren Land
- Forested
- Grassland
- Wetland

Map Projection: North American 1927 UTM_Zone_19N
 Graticule Units: degrees, minutes, seconds
 Scale: 0 to 30 Kilometers / 0 to 20 Miles
 Map frame rotated 19 degrees from North
 * Little Spoon / is a recent acquisition

MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Map 1-8 Inner Penobscot Bay



Map frame rotated
19 degrees from North

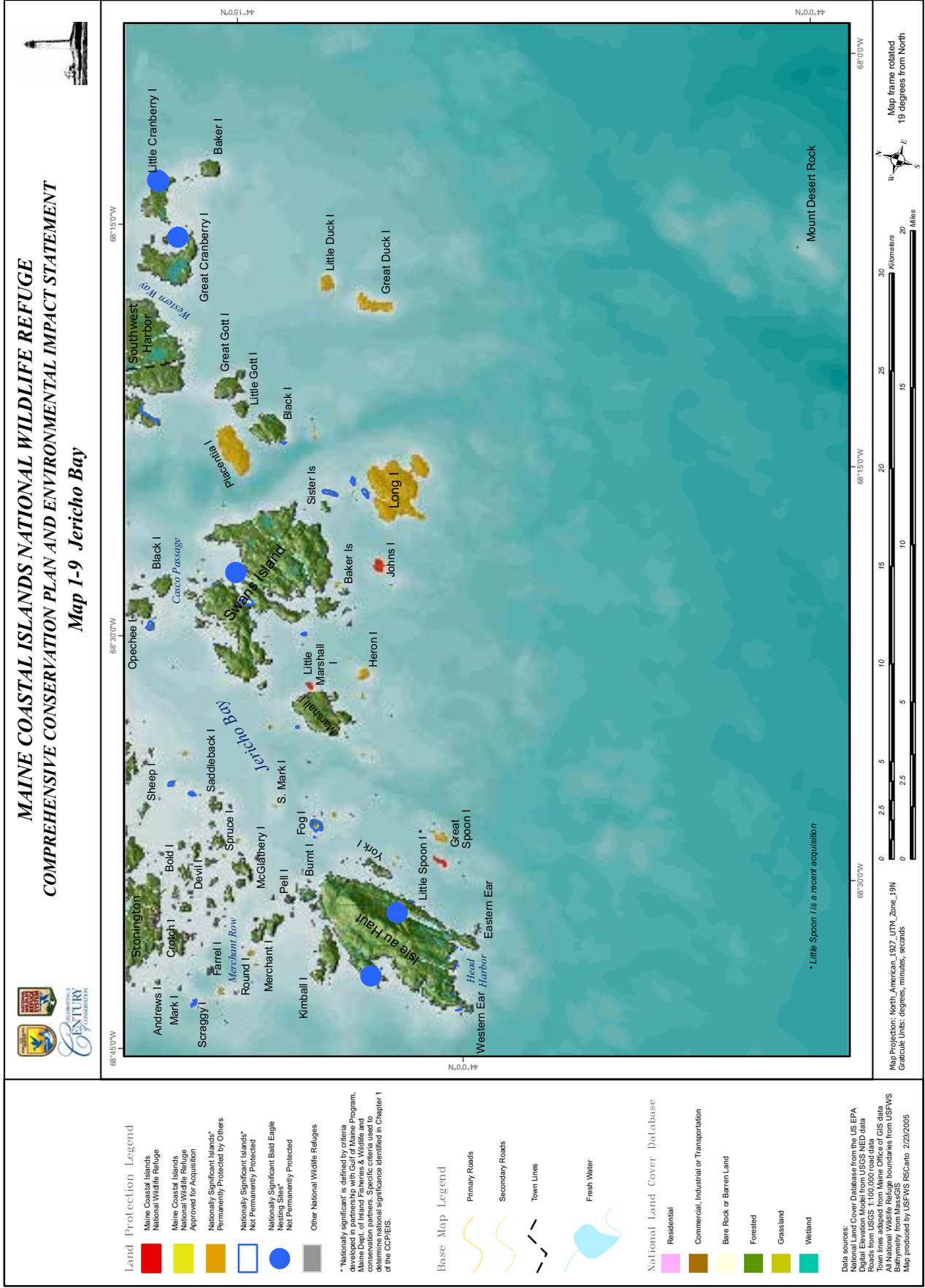
- Land Protection Legend**
- Maine Coastal Islands National Wildlife Refuge
 - Maine Coastal Islands National Wildlife Refuge Approved for Acquisition
 - Nationally Significant Islands* Permanently Protected by Others
 - Nationally Significant Islands* Not Permanently Protected
 - Nationally Significant Bald Eagle Nesting Sites*
 - Not Permanently Protected
 - Other National Wildlife Refuges

* "Nationally significant" is defined by criteria developed in partnership with staff of Maine Program, Maine Dept. of Inland Fisheries & Wildlife and conservation partners. Specific criteria used to determine national significance identified in Chapter 1 of the CCP/EIS.

- Base Map Legend**
- Primary Roads
 - Secondary Roads
 - Town Lines
 - Fresh Water

- National Land Cover Database**
- Residential
 - Commercial, Industrial or Transportation
 - Bare Rock or Barren Land
 - Forested
 - Grassland
 - Wetland

Data sources: Cover Database from the US EPA Digital Elevation Model from USGS NED data Roads from USGS 1:100,000 road data Town lines adapted from Maine Office of GIS data Bathymetry from MassGIS Boundaries from USFWS Map produced by USFWS RSCarlo /11/2005



MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Map 1-10 Frenchman Bay



68°45'0"W 68°30'0"W 68°15'0"W 68°0'0"W
 44°15'0"N 44°30'0"N 44°45'0"N

Land Protection Legend

- Maine Coastal Islands National Wildlife Refuge
- Maine Coastal Islands National Wildlife Refuge Approved for Acquisition
- Nationally Significant Islands* Permanently Protected by Others
- Nationally Significant Islands* Not Permanently Protected
- Nationally Significant Bald Eagle Nest Permanently Protected
- Other National Wildlife Refuges

* Nationally significant is defined by criteria developed in partnership with Cur of Maine Program, conservation partners. Specific criteria used to determine national significance identified in Chapter 1 of the CCP/EIS.

Base Map Legend

- Primary Roads
- Secondary Roads
- Town Lines
- Fresh Water

National Land Cover Database

- Residential
- Commercial, Industrial or Transportation
- Bare Rock or Barren Land
- Forested
- Grassland
- Wetland

Data sources:
 National Land Cover Database from the US EPA
 Digital Elevation Model from USGS NED data
 National Wetlands Inventory from USFWS
 Town lines adapted from Maine Office of GIS data
 All National Wildlife Refuge boundaries from USFWS
 Bathymetry from MassGIS
 Map produced by USFWS RSCart 2/23/2005

Map Projection: North American 1927 UTM_Zone_18N
 Graticule Units: degrees, minutes, seconds

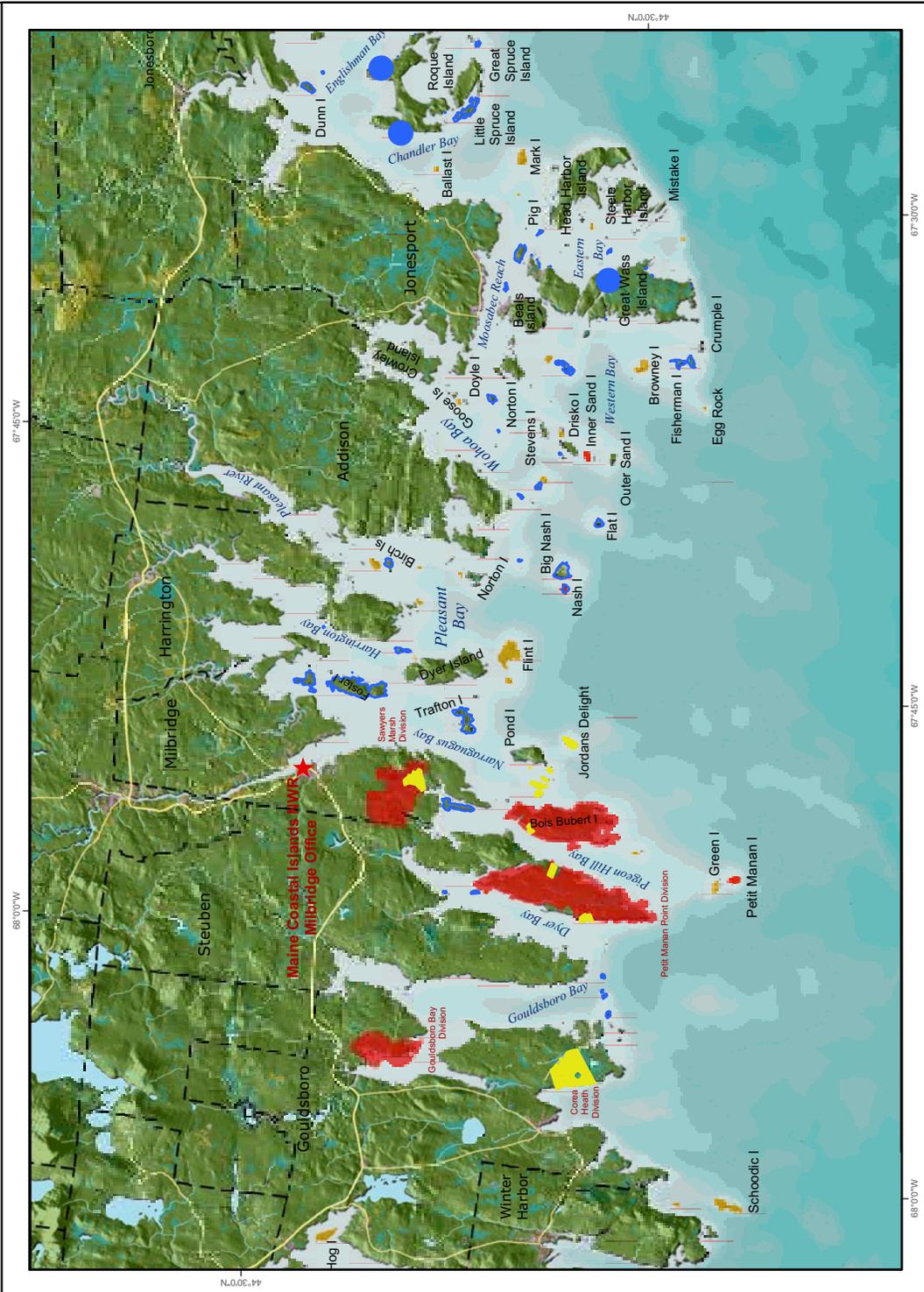
0 2.5 5 10 15 20 25 30
 Kilometers

0 2.5 5 10 15 20
 Miles

Map frame rotated 19 degrees from North

MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Map 1-11 Petit Manan



- Land Protection Legend**
- Maine Coastal Islands
 - National Wildlife Refuge
 - Maine Coastal Islands
 - National Wildlife Refuge
 - Approved for Acquisition
 - Nationally Significant Islands*
 - Permanently Protected by Others
 - Nationally Significant Islands*
 - Not Permanently Protected
 - Nationally Significant Bald Eagle
 - Not Permanently Protected
 - Other National Wildlife Refuges

Nationally significant is defined by criteria developed in partnership with the Maine Program, U.S. Fish and Wildlife Service, and other conservation partners. Specific criteria used to determine national significance identified in Chapter 1 of the CCOPEIS.

- Base Map Legend**
- Primary Roads
 - Secondary Roads
 - - - Town Lines
 - Fresh Water

- National Land Cover Database**
- Residential
 - Commercial, Industrial or Transportation
 - Bare Rock or Barren Land
 - Forested
 - Grassland
 - Wetland

Data sources:
 National Land Cover Database from the US EPA
 National Wetlands Inventory from the US EPA
 Roads from USGS 1:100,000 road data
 Town lines adapted from Maine Office of GIS data
 All National Wildlife Refuge boundaries from USFWS
 Boundary from the US Fish and Wildlife Service
 Map produced by USFWS RegCaro 1/11/2005

Map Projection: North American 1927 UTM Zone 18N
 Graticule Units: degrees, minutes, seconds

Scale: 0 2.5 5 10 15 20 25 30 Kilometers
 0 2.5 5 10 15 20 Miles

Map frame rotated 19 degrees from North

MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT
Map 1-12 Cobscook Bay



Map frame rotated 19 degrees from North

Map Projection: North American, 1927 UTM, Zone 19N
 Graticule Units: degrees, minutes, seconds

- Land Protection Legend**
- Maine Coastal Islands National Wildlife Refuge
 - Maine Coastal Islands National Wildlife Refuge Approved for Acquisition
 - Nationally Significant Islands* Permanently Protected by Others
 - Nationally Significant Islands* Not Permanently Protected
 - Nationally Significant Bald Eagle Nesting Sites*
 - Nationally Significant Bald Eagle Nesting Sites* Not Permanently Protected
 - Other National Wildlife Refuges

* "Nationally significant" is defined by criteria developed in partnership with Gulf of Maine Program, Maine Dept. of Inland Fisheries & Wildlife and conservation partners. Specific criteria used to determine national significance identified in Chapter 1 of the CCP/EIS.

- Base Map Legend**
- Primary Roads
 - Secondary Roads
 - Town Lines
 - Fresh Water

- National Land Cover Database**
- Residential
 - Commercial, Industrial or Transportation
 - Bare Rock or Barren Land
 - Forested
 - Grassland
 - Wetland

Data sources:
 National Land Cover Database from the US EPA
 National Wetlands Inventory from the US EPA
 Roads from USGS 1:100,000 road data
 Town lines adapted from Maine Office of GIS data
 All National Wildlife Refuge boundaries from USFWS
 Map produced by USFWS RSGCano 11/22/2005

Chapter 2



Freshwater pond on Bois Bubert Island
USFWS photo

Planning Process

- The Comprehensive Conservation Planning Process
- Issues, Concerns and Opportunities
- Issues Outside the Scope of this EIS

The Comprehensive Conservation Planning Process

An Early Planning Effort

In 1993, the Service began to evaluate the need for additional protection of Maine coastal nesting islands. In 1995, the Service's plans to prepare an EIS to study the protection of significant seabird, wading bird, and eagle nesting islands on Maine's coast was officially announced through a Federal Register Notice of Intent.

Throughout 1995, four public forums and six public scoping meetings were held in Ellsworth, Machias, Owls Head, Rockport, Brunswick, Freeport, Wells, and Augusta, Maine. The locations, dates, and times for these meetings were announced in local newspapers, as well as through special mailings. Over 250 people attended the public forums, co-sponsored by the Service and 33 additional groups interested in promoting protection of coastal islands. More than 60 people attended the scoping meetings, the purpose of which was to let people know what the Service was doing and share what we have learned about coastal nesting island wildlife and their habitats. Also during 1995, over 1,100 copies of an Issues Workbook were distributed. These workbooks asked people to share what they valued most about the islands, their vision for island protection in the future and the Service's role in that future, and any other island issues they wanted to raise. One hundred and forty copies of the workbooks were returned to us. We summarized the information and shared the results in a Project Update newsletter in May 1996.

Also in May 1996, the Service held a two-day facilitated workshop at the Bar Harbor Inn in Bar Harbor, Maine. The 24 participants included island owners, local land trusts, conservation organizations, town officials, sea kayaking companies, tour boat operators, representatives from the aquaculture industry, property rights supporters, and State and Federal agency representatives. The participants discussed the information gathered on seabird, wading bird, and eagle populations and island ownerships, as well as the results of the workbook. Work groups were formed to identify potential management actions and strategies available for protecting, managing, and restoring coastal nesting islands, and to establish a consensus action plan that workshop participants could support. During 1997 and 1998 further planning on this project was delayed pending passage of the Refuge Improvement Act and new Service planning policy. During this time, we determined that the focus of our planning should be expanded to include not only Service acquisition of Maine coastal nesting islands, but all other aspects of refuge management as well. This expanded effort would better comply with the intent of the new Service planning policy.

Our Recent Planning Effort

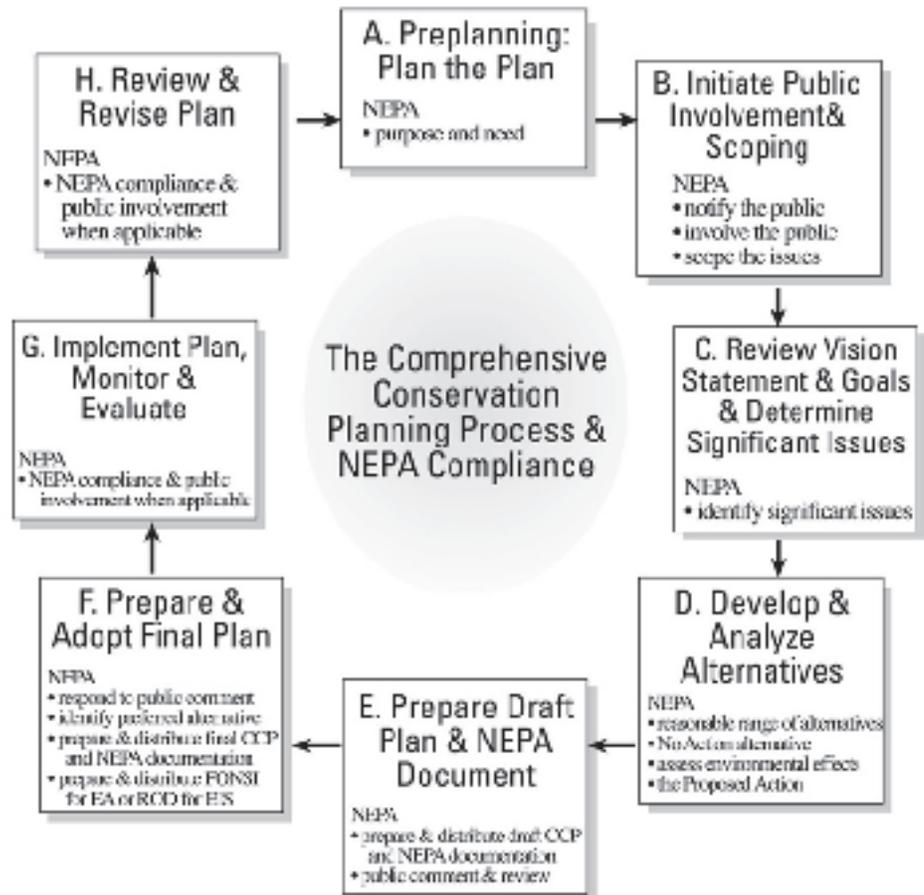
The planning process was restarted in the summer of 1999, and a new planning team was formed to produce a draft CCP/EIS. Our core planning team consisted of the Refuge staff, Regional Office planning, visitor services, and cultural resources staff, and one staff from the Maine Department of Inland Fisheries and Wildlife (MDIFW). We regularly consulted with the Regional Refuge Biological Program staff, Migratory Bird pro-

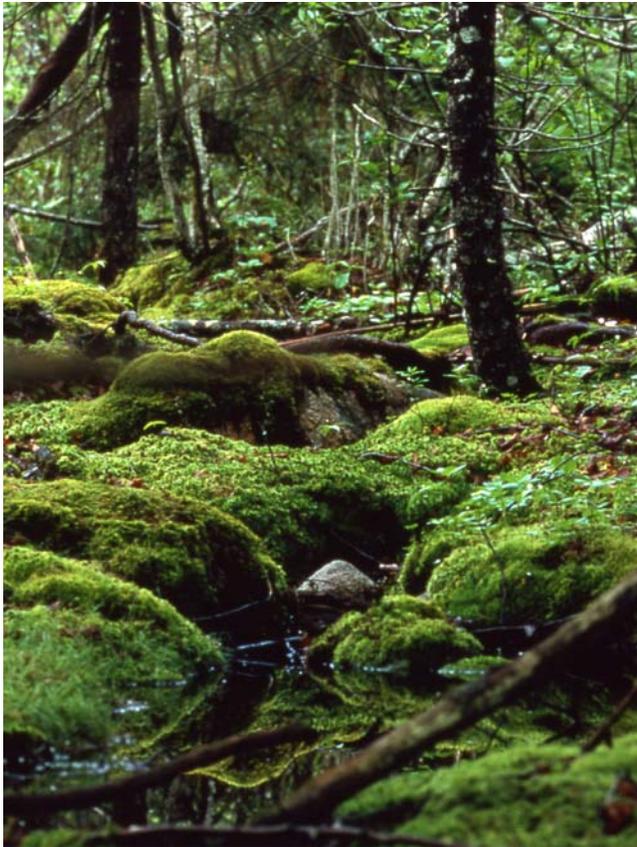
gram staff, Gulf of Maine Program Ecological Services staff, and program specialists with MDIFW.

Service planning policy establishes an eight-step process (Figure 2-1) which we followed in developing this Final CCP. Individual steps are described in detail in the planning policy and CCP training materials. As part of “Step A: Preplanning,” we developed a preliminary Refuge vision statement, goals and identified issues and management concerns. We reviewed the 1995 list of issues and concerns for the project, expanded them to include issues on existing refuge lands, and prepared to gather additional comments from the public. The revised list of issues and concerns is presented below.

During this step, we also initiated a wilderness review of existing Refuge lands. This review is the process we use to determine if we should recommend Refuge System lands and waters to Congress for wilderness designation. The wilderness review process consists of three phases: (1) inventory, (2) study, (3) recommendation. Our Refuge Planning Policy requires us to conduct a wilderness review concurrent with the CCP process and incorporate the summary of the review into the CCP (602 FW 3.4 C. 1(c)). The process we followed for this CCP is described in Appendix D.

Figure 2-1 Steps in the comprehensive conservation planning process and their relationship to National Environmental Policy Act compliance





A view from the John Hollingsworth Memorial Trail, Petit Manan Point Division
Myer Bornstein, SEMASS Photos

Next, we completed “Step B: Initiate Public Involvement and Scoping,” which provided an opportunity for the public to critique, or add to, the vision, goals, and issues for the Refuge. We held public meetings and open houses in Augusta, Milbridge, and Rockport in 2000. A newsletter shared the comments from the open houses with the people on our mailing list.

Following the public meetings, the planning team met a few times, and individual members drafted and refined elements of our management alternatives. Our next newsletter, published at the end of 2001, shared our draft alternatives with the public. At publication, we presented five management alternatives, but after further analysis, we determined that one of the alternatives was not significantly different than the others. All the significant components of this alternative were included in at least one of the other four alternatives. Therefore, we reduced our analysis to four alternatives.

During 2002, we concentrated on completing the analysis for Draft CCP/EIS “Chapter 2: Alternatives” and “Chapter 4: Environmental Consequences.”

From April 30 to July 6, 2004, we published our Draft CCP/EIS and released it for 68 days of public review and comment. We notified everyone on our project mailing list of the document’s availability and published a notice in the “Federal Register” on April 30, 2004. The document is also posted on our National Conservation Training Center Library website (http://library.fws.gov/CCPs/petitmanan_index.htm). In addition, we held four formal public hearings on the following dates and locations:

- June 1, 2004, 7-9:00 p.m., Rockland Public Library, Rockland, ME
- June 2, 2004, 7-9:30 p.m., Milbridge Town Hall, Milbridge, ME
- June 8, 2004, 7-9:00 p.m., Pine Tree State Arboretum, Augusta, ME
- June 9, 2004, 7-9:00 p.m., Falmouth Public Library, Falmouth, ME

Eighty-five people attended the public hearings: 28 in Rockland; 35 in Milbridge; 9 in Augusta; and 13 in Falmouth. Thirty gave oral testimony: 12 in Rockland; 7 in Milbridge; 4 in Augusta; and 7 in Falmouth. Some others did both. More comments arrived later by post or electronic mail.

We received a total of 594 public responses in oral testimony at public hearings, in phone calls, or in written or electronic documents. In the Final

EIS, Appendix I, there is a summary of the comments we received and our response to them. In some cases, our response resulted in a modification to alternative B, our preferred alternative. Our modifications include additions, corrections, or clarifications of our preferred actions in this Final CCP.

Our Regional Director will issue a Record of Decision (ROD), the final decision document in the planning process approving the final CCP, after:

- Our Service Director has reviewed and approved our Land Protection Plan; and,
- We have provided the final documents to interested or affected parties for a 30-day waiting period, which will start when we publish a notice in the “Federal Register” that we have prepared a final EIS and CCP.

Once our Regional Director has signed the ROD, the planning phase of the CCP process is complete, and its implementation phase begins.

Issues, Concerns, and Opportunities

From the Issues Workbook, public and focus group meetings, and planning team discussions, we developed a list of issues, opportunities, or any other item requiring a management decision. We utilized these issues to drive the analysis and comparison of alternatives in the Draft and Final EISs.

Issues were sorted into three categories:

1. Significant issues – these issues formed the basis for the development and comparison of different management alternatives. A range of opinions on how to resolve these significant issues and meet objectives generated the different alternatives presented in the Draft CPP/EIS and Final EIS Chapter 2. These issues are resolved differently among the alternatives. Significant issues are discussed in detail below.
2. Other issues to address – these issues and management concerns are also presented in Draft CPP/EIS and Final EIS Chapter 2, but are not considered “significant.” These issues are often resolved in a similar manner in all of the alternatives.
3. Issues and concerns outside the scope of this CCP – these issues do not fall within the scope of the purpose of and need for action as we described in Chapter 1. They are identified below, but will not be further addressed in this document.

Significant Issues

The following issues were generated by the planning team or brought to our attention by our State or other partners, or the public, during scoping activities. These issues generated a wide range of opinions including those in support of, to those fully against the particular activity involved. The issues matrix in Chapter 2 of the Draft CCP/EIS and Final EIS shows how we dealt with these issues through actions and strategies in the four alternatives evaluated. We provide a summary of the different opinions we heard in each discussion of significant issues below.

1. How will we protect the coastal nesting islands, given the finite number of islands suitable for seabird, wading bird, and eagle nesting?

There are a limited number of coastal nesting islands providing seabird, wading bird and eagle nesting habitat. Of the more than 4,617 Maine coastal islands, 377 are considered to be nationally significant coastal nesting islands. Only 226 of these are currently protected by either the Service, MDIFW, or the National Audubon Society, all of whom have either legislative authority or a management mission to maintain and enhance seabird, wading bird, or eagle nesting habitats. Each of these entities has ongoing seabird restoration projects which are very expensive and challenging to undertake.

Many people have expressed concern about the remaining 151 nationally significant coastal nesting islands, which do not have permanent, long-term protection and are subject to development pressures; pressures which continue to increase with the population on Maine's coastal islands. Some noted that the obvious threat is the direct loss of nesting habitat when construction occurs. They commented that residential development near nesting areas can indirectly result in disturbances during construction activities and from the influx of summer residents and their pets. Other concerns include the removal of potential bald eagle nesting trees through logging, and the harvest of other native vegetation or overgrazing by domestic animals which alters vegetation so it is no longer desirable to nesting seabirds.



Arctic terns
USFWS photo

On the other hand, we heard from some private island owners who feel they manage their islands with a conservation ethic and achieve the desirable habitat objectives. Some expressed the opinion that we “should just let nature take its course” and not intervene. Other people fear Federal ownership will result in a greatly diminished local voice in how the islands are used, and they expect the result will be additional restrictions on traditional activities on or near the islands. These respondents believe the Service will not be responsive to local concerns and that the islands will no longer be subject to local influences. Some expressed the opinion that market forces should dictate the status of land protection. Others recommended that either State agencies or national and local conservation organizations take the lead in land protection, and that the Service act only in a support role. Still, others suggested that the Service pursue conservation easements instead of fee simple purchases as a means of protection. In their opinions, this would lessen the impact on local property tax revenues. The Draft and Final EIS alternatives evaluated different levels of land protection, including the number of islands recommended for Service acquisition.

2. How will we deal with increased recreational and commercial uses promoted by others on or near coastal nesting islands?

Tourism is an important component of the State and local economies, providing many seasonal jobs, and affecting many industry sectors. A great deal of revenue is generated from the millions of visitors who come to enjoy coastal Maine in the summer. The coastal nesting islands provide an important niche in the “eco-tourism” industry, at least partly because of the wildlife viewing opportunities they provide. Commercially provided seabird viewing activities are experiencing rapid growth. The total dollar volume of sales in this activity is approximately \$1,000,000 per year, with at least 20,000 participants. Many people also regularly enjoy seabird viewing without paying a commercial venture; they motor or paddle out to islands in their own canoes or kayaks. The total dollar value attributed to this activity in coastal Maine is approximately \$525,000 per year, with at least 10,500 annual visits (Colgan, 2002).

We heard concerns about the growth of this eco-tourism industry, specifically the increased number or frequency of tour boats visiting coastal nesting islands, resulting in an increased potential for disturbing nesting seabirds, wading birds, and eagles. Yet other respondents expressed an interest in seeing this wildlife observation opportunity continue, commercially provided or otherwise. Some mentioned an increased outreach and education campaign might ensure visitors become aware of the disturbances created and seek ways to minimize it. Others recommended that the islands be off-limits and that we enforce a wide no-access zone around the islands during the nesting season to preclude boat activity.

The Draft and Final EIS alternatives considered various levels of outreach to user groups such as canoeists, kayakers, and commercial touring operations.



Seabird-watching cruise
USFWS photo

3. How will our management activities affect public access to coastal nesting islands?

Under the Colonial Ordinance of 1641-1647, as clarified by Title 12 M.R.S.A. 571 et seq., people have a right to use the intertidal zone around islands for “fishing, fowling, and navigation.” The intertidal zone is the area between mean low and mean high water. Use of the island above mean high water, however, is controlled by the property owner(s). Most people recognize that Service acquisition of nesting islands will result in a seasonal closure to protect the nesting seabirds, wading birds, or bald eagles. Opinions vary on this restriction.

Some people want increased opportunities for public access to coastal islands and would not support any additional restrictions. They believe that allowing people to experience the islands first-hand will contribute to their understanding and appreciation of these national resources. Many commented that access should especially be allowed for historic and traditional

activities, such as berry picking, waterfowl hunting, camping, and annual family picnics.

Others are concerned that increased public access will only lead to increased disturbance to nesting birds, and sensitive plant and cultural areas. Some expressed concern with the potential for increased vandalism and trespass on private property when access on adjacent Federal lands is allowed. A few suggested that the islands be off-limits year round to ensure full protection of the special resources found there. Others believe access should be allowed, but tightly controlled.

The Draft and Final EIS alternatives compared different levels of public access, including variations on the seasonal closure period and the types of uses allowed.



A view of the shore of Cross Island
USFWS photo

4. How will we manage habitats to protect threatened or endangered species or other species of management concern?

Several Federal-listed species, including the threatened bald eagle and the endangered roseate tern, are found on some of Maine's coastal islands. Several of these islands are part of the Refuge. A number of State-listed species, including several plants, are also present on these islands. Active management, to avoid habitat loss or degradation and sustain or increase populations, is one of the best ways to ensure the long-term survival of these species of concern. Several Refuge islands have active seabird habitat restoration programs in place.

The Service is responsible for protecting Federal-listed endangered and threatened species and keeping additional species off of the Federal list. In addition to these, there are other species of management concern warranting protection, including anadromous fish, certain marine mammals, State-listed and other rare or declining species as identified in Appendix B.

Many people expressed their interest in protecting these species and, where possible, increasing populations through management. Their reasons ranged from a fear of losing a species entirely to an interest in maintaining overall biological diversity on coastal islands. Some are particularly interested in increasing well-distributed populations throughout the Gulf of Maine to protect against catastrophic losses. Others expressed the view that many unique natural communities and species of plants and

animals, both terrestrial and marine, are found on coastal nesting islands. Protecting this diversity is the key to a healthy island environment. The emphasis on coastal nesting islands for seabirds, wading birds, and eagles will have direct and indirect benefits for many other species.

A few people are concerned that refuge management is focusing too much on protecting nesting habitat at the expense of the other habitat needs for a given species. They argue that it is equally important to protect the feeding, roosting, and migratory areas used by the birds. Feeding areas located on mudflats or open water may be subject to disturbance or over-harvesting of resources upon which the birds depend. Habitat in feeding areas may be disturbed or altered by dredging and dragging, deposition of sediments or dredged materials, or other activities. Others point out the need to learn more about what the birds feed on and where they feed.

Some people expressed fear that the presence of endangered or threatened species will severely restrict their ability to continue using and enjoying the islands. They do not support increased Federal acquisition of islands. Other respondents want us to “let nature takes its own course” without any intervention in managing these populations.

Several people wanted a clearer understanding of our management goals and objectives before they formed an opinion. They asked how we will decide on population goals for species of management concern, and how this translates into habitat management on coastal islands.

The Draft and Final EIS alternatives compared different objectives and strategies for managing the species of management concern identified in Appendix B.

5. How will we control the impacts of predators on species of management concern?

We identified the need to control predators at seabird nesting sites as an important management concern. Herring and great black-backed gulls are highly effective at preying on the eggs and young of several nesting sea-

bird species of concern. In addition, these two gulls often out-compete less common species, such as terns and laughing gulls, for nesting space on islands. In our current management, we generally remove nesting herring and black-backed gulls before we restore colonies of the less common seabirds. Mammals like rats, raccoons, mink, cats, and birds like owls and night-herons can also create serious predation problems on islands. Some people recognize the importance of controlling predators to help maintain and restore diversity on nesting islands. Others are concerned about lethal predator control techniques, including trapping



Great back-backed gull preys on tern
Photo courtesy of the Cornell Laboratory of Ornithology

and the use of avicides, and adamantly oppose their use on the Refuge. Some people support predator control only if there is a threat to human life.

The Draft and Final EIS alternatives compared and contrasted different levels and techniques of predator control.

6. How will we manage sheep grazing on refuge lands?

We identified the amount and timing of sheep grazing on Refuge islands a management concern. Sheep currently graze on Nash and Metinic islands, where they have grazed for over 100 years. Grazing also occurs on other islands proposed for Service acquisition in the Land Protection Plan (Appendix A). Grazing is considered a traditional and historic island activity by many people. Others, however, feel that grazing is inconsistent with the “wildlife first” mission of the Refuge System and oppose this activity on refuge lands.

Our observations on Nash and Metinic islands, and on other grazed private islands, indicate that when sheep graze too long in one area, or their numbers exceed foraging capacity, their presence can have a serious impact on nesting seabirds and their habitat. Overgrazing destroys the grasses and shrubs needed by nesting terns and eiders and forces nesting birds to use lower quality habitat elsewhere on the island. In addition, sheep can directly disturb the birds by trampling their nests and eggs, or by forcing adult birds to flush from the nest, making their eggs or young more susceptible to predation by gulls.

On the other hand, our staff and sheep owners feel that grazing can be used as an effective vegetation management tool when the number of animals, time of year, and length of grazing season are properly managed. In general, the vegetation on tern nesting islands must be managed to promote shorter grasses and other herbaceous vegetation, and not allow shrub or other woody growth, such as raspberry. It is challenging to get equipment to these islands, and prescribed fire is not always a viable option. As such, sheep grazing is considered by many to be a practical solution if managed properly to meet specific objectives.

The Draft and Final EIS alternatives evaluated different levels of sheep grazing in support of seabird habitat management.



Grazing sheep dot the Metinic Island landscape
USFWS photo

7. How will we manage non-native, invasive species on refuge lands?

Most people recognize that non-native, invasive plants and animals can displace native species, degrade wetlands and other natural communities,

and reduce natural diversity and wildlife habitat values. Non-native plants outcompete native species by dominating light, water, and nutrient resources. We are concerned that, once established, invasive plants are expensive and labor-intensive to eliminate; they are able to establish easily, reproduce prolifically, and disperse readily, making eradication difficult. Preventing new invasions is extremely important for maintaining biological diversity and native plant populations.

Fortunately, the Refuge has very few non-native plant or animal species on its mainland divisions. In these areas, monitoring is all that has been warranted to date. On Refuge islands, however, little information is available.

The Draft and Final EIS alternatives considered different levels of effort to determine the presence of invasive plant species and establish management strategies to deal with them.

8. How can we effectively monitor and inventory wildlife populations and habitat on refuge lands?

We are challenged each year by the staffing, funding, and logistical requirements of an effective resource monitoring and inventory program. We must make difficult choices regarding priorities because of limited available resources, which can vary widely between years. Unfortunately, our budget does not include a dedicated source of permanent funding for carrying out important habitat and population inventory and monitoring activities. We rely on competitive sources of funding – Challenge Grants, Cooperative Agreements, the National Fish and Wildlife Foundation, habitat funds, etc., to supplement Service funding. The uncertain availability of funding from year to year has always hampered our long-term planning.

Everyone we spoke with encouraged the continued partnership with the Gulf of Maine Coastal Program, where resource information is shared among many groups. The Coastal Program compiles and analyzes scientific resource data collected by the Service, State, and private conservation organizations. Through their analysis, they identify significant fish and wildlife habitats in need of protection, monitor population trends for certain species in the Gulf of Maine, identify existing information gaps for species of concern, and, consequently, determine future research needs. Many people feel this effort fills an important need and must be continued as an ongoing and long-term project. Others pointed out that



Roseate tern with fish
Photo courtesy of Gil Lopez-Espina

other partnerships, for examples, with universities and colleges, conservation organizations, private landowners, or aquaculture representatives may be available to support implementation of Service inventory and monitoring priorities and encouraged us to explore these possibilities.

The Draft and Final EIS alternatives considered different levels of inventory and monitoring effort and pursuit of partnerships to accomplish priority activities.

9. How will we build partnerships to protect coastal wildlife habitats and support priority wildlife-dependent uses?

We have established many valuable partnerships working to protect wildlife and habitats along the Maine coast. Partners are integral to virtually every program on the Refuge. Our partners assist us in activities including environmental education and interpretive programs, habitat evaluations, species inventories, nest site monitoring, and seabird restoration. In Chapter 3 we describe these partners and their missions in greater detail.

Due to the cyclical nature of funding for government agencies and the consistent membership support in conservation organizations, partnerships among public agencies and private organizations are vital to accomplishing Refuge goals. Many people believe the only way to protect Maine's islands is for all parties – private island owners; Federal, State and local agencies; and private industry and organizations – to voluntarily join forces, form partnerships, and pool resources to accomplish the common good. There is a great deal of support for an approach that focuses on voluntarily working together in the spirit of cooperation, combining resources, sharing information, keeping people informed, and simply being good neighbors.

Partnerships can also help us provide high-quality, wildlife-dependent, public use opportunities. Non-consumptive uses such as environmental education are especially amenable to partnerships.

The Draft and Final EIS alternatives compared different levels of effort towards pursuing partnerships.

10. How will we provide and maintain high-quality programs for the six priority public uses (hunting, fishing, environmental education and interpretation, and wildlife observation and photography)? Also, how will we manage traditional uses?

Local residents have expressed concern about the possible loss of opportunities to participate in many of the traditional activities they have enjoyed on, or adjacent to, coastal nesting islands. These include picnicking, camping, berry picking, shell fishing, fin fishing, trapping, and waterfowl hunting. They fear that any conservation or protection measures taken on nesting islands will result in additional restrictions on opportunities to pursue these activities. Others point out that these activities, when carried out during the nesting season, can disturb the birds. They believe that use

of the islands during the nesting season must be restricted or very tightly controlled.

Many people identified environmental education and interpretation opportunities as their highest priority for public use at the refuge. They expressed concern that there are both local residents and frequent visitors who are unaware of the importance of the nesting islands and the role they play in the coastal ecosystem. It is a concern to some that most people are not familiar with the less visible and more uncommon species that inhabit the islands. In order to instill a sense of wonder regarding the special habitats and populations found on the nesting islands and encourage ethical practices, many people believe that more environmental education opportunities should be provided. In particular, they want us to increase our outreach efforts to local schools and communities.

As a priority, we will continue to promote the wildlife-dependent uses (e.g. hunting, fishing, wildlife observation and photography, environmental education, and interpretation) stipulated in the Refuge Improvement Act, to the extent they are determined compatible with refuge purposes. It is only after the Refuge Manager determines that the use is compatible that we will open for any new use, or expand, renew, or extend an existing use.

The Draft and Final EIS alternatives evaluated different levels of providing compatible public use programs, emphasizing the six priority wildlife-dependent public uses identified in the Refuge Improvement Act. Appendix C includes the compatibility determinations completed for the Service's Preferred Alternative.

11. How will we manage activities that are not compatible on refuge lands?

Many people have expressed concern about the vandalism, trespass, intertidal harvesting, and other collecting occurring on Refuge islands.

They point out that a Service presence is limited on most islands during the year, and that many of these activities are undetected. A few people mentioned that only a few islands have signs or notices alerting people to allowed activities and seasons of use. Another concern identified is that people often bring pets ashore when visiting islands, which can cause serious problems to wildlife during the nesting season.

In general, it is very difficult to enforce trespass laws on islands. Also challenging is the fact that the Service does not have jurisdiction in the intertidal areas unless a Federal law is violated or Federal trust resources may be impacted. Generally, the intertidal areas are under the jurisdiction of the State.



An illegal campsite on Schoppee Island
USFWS photo

The Draft and Final EIS alternatives evaluated different strategies for dealing with activities already occurring on the Refuge that have been determined incompatible with Refuge purposes. The strategies included various levels of outreach and law enforcement capability.

12. How will we improve communications, raise the visibility of the Service and Refuge System, and build working relationships with local communities?

Local residents are becoming more aware of Refuge activities and benefits to their local communities. However, we are striving for even stronger ties to local communities to gain increased understanding and support for the Refuge System and our Refuge programs. Through increased communications, listening and sharing information, we believe we can make great strides toward conserving the nationally significant resources along coastal Maine.

Some people suggested regular contacts with Tribal representatives, State and local elected officials, and conservation planning efforts at State and local levels. Others would like us to be more involved in Chamber of Commerce and local community events. A Friends Group, Friends of Maine Seabird Islands, has been initiated in the mid-coast area, which shows great promise as an advocacy group for the Refuge.

Other ideas were shared to increase the Service's visibility and Refuge activities. Some people noted that not all Refuge islands have boundary, informational, or regulatory signs to make visitors more aware of the importance of the islands to nesting birds and their vulnerability to disturbance. These respondents believe that more people need to understand that the islands are closed during the nesting season solely for the protection of the birds. Others suggested that informational brochures be developed to educate people and build public support for island protection.

The Draft and Final EIS alternatives compared different levels of community involvement and ways of raising the Service's visibility.

13. What funding, staffing, and infrastructure will we need to manage a refuge that spans the coast of Maine and includes coastal islands?

Many who support Refuge management activities appreciate the logistical challenges of managing 42 islands scattered over 200 air-miles of the Maine coast. When carrying out management or law enforcement activities, we must haul boats by trailer from the Refuge offices in Milbridge or the satellite office in Rockport to public launch sites on the mainland. In good weather, it can take as long as 1 to 2 hours to reach those islands farthest out once the boat is launched. Often, in periods of high seas and fog, it is virtually impossible to reach the islands. Setting up and supplying summer base camps on the islands to support research and management activities can be time consuming, costly, and dangerous. Many islands are difficult to land on, even in good weather. A few people noted that more staff located centrally in the mid-coast area might alleviate some of this problem.



Transporting people and equipment on the Refuge is often a challenge
USFWS photo

Some people expressed their concern with the lack of law enforcement capabilities on Refuge lands. We currently have no law enforcement officers on the staff. Adequately patrolling Refuge mainland areas and widely scattered islands and responding to incidents has become an impossible task. As public use of the Refuge increases, current law enforcement difficulties will be compounded, especially during the critical nesting season, when the potential for disturbance is greatest.

The Draft and Final EIS alternatives compared different funding and staffing levels needed to support respective objectives and strategies.

14. Which lands will be studied for their wilderness potential and recommended for inclusion in the National Wilderness Preservation System?

Service planning policy requires us to review current Refuge lands for their wilderness potential during the CCP planning process. A wilderness review consists of three phases: 1) inventory; 2) study; and, 3) recommendation. A wilderness inventory is conducted first to see if refuge lands meet the minimum criteria established in Section 2(c) of the Wilderness Act. Lands that meet the criteria are called wilderness study areas (WSAs). In the study phase, we evaluate the WSA's values (e.g., ecological, recreational, cultural, economic, and symbolic), resources (e.g., wildlife, water, vegetation, minerals, and soils), and existing and proposed public uses, and analyze whether we can manage the wilderness values and character over the long-term.

Basically, we determine if the WSAs are suitable for wilderness designation. The inventory and study phases are incorporated into the CCP process. In the recommendation phase, we forward the suitable recommendations on to our Director. Our Director must concur with the wilderness study findings and suitable recommendations before they are forwarded or reported through the Secretary of Interior and the President of the United States, to Congress for final approval.

We conducted an inventory and study of existing Refuge lands and determined that 13 islands met the minimum criteria for wilderness. These islands were then grouped into eight WSAs. At this stage, the issue thus becomes whether we can manage for wilderness values and character long-term, without jeopardizing our management to achieve each affected refuge's establishment purposes and the Refuge System mission.

We have heard mixed support for wilderness designation. Some people were simply unsure how this would affect current management of Refuge islands; namely, how such a designation would impact public use and access. Several other people supported wilderness designation for as much



Birch Point Trail on Petit Manan Point Division
USFWS photo

refuge land as possible to prevent land uses, such as timber harvesting or grazing, that they believed could potentially degrade natural values. Others felt that wilderness designation would actually harm the character of coastal Maine by attracting additional visitors to the islands. Some of these same people felt that the Service could manage for wilderness character while not officially designating it as such. In addition, we heard from others who expressed concern that designation could impact commercial or recreational opportunities on adjacent lands.

The Draft and Final EIS alternatives ranged from proposing none to all eight WSAs for inclusion into the National Wilderness Preservation System. The Final EIS, Chapter 4, analyzed the consequences of each alternative's proposal. Our final recommendation is presented in Appendix D.

Other Issues to Address

1. How will refuge activities affect the local economy and tax base?

Many people expressed the opinion that refuge lands affect the local economies primarily by increasing the potential for eco-tourism (see issue #2, "Increased recreational and commercial uses on or near coastal nesting islands").

Some people are concerned that refuge lands reduce the local tax base, since the Federal government does not pay property taxes. They believe this places an additional financial burden on town residents who own land and pay taxes on their property. They note that, in addition to Federal lands, those owned by the State and some land trusts are tax-exempt, which has a cumulative impact on the tax base. On the other hand, others noted that Refuge Revenue Sharing payments to towns help offset, and sometimes more than compensate for, these tax losses.

A few people value the open space protection provided by refuges and believe the tangible and intangible benefits to the community are much greater when these islands are protected and kept as open space. They noted that open space benefits local economies by raising property values, lowering infrastructure needs, and maintaining lower costs for community services compared to developed areas.

The Draft and Final EIS alternatives had differing impacts on the local economy which were described in Chapter 4: Environmental Consequences.

2. How will we protect historic resources on refuge lands?

Some people expressed their interest in protecting the lighthouses and associated structures. A few people represented national organizations dedicated to this preservation effort. Eight refuge islands have lighthouses:

Libby, Petit Manan, Egg Rock, Matinicus Rock, Two Bush, Franklin, Pond, and Nash islands. Except for the Nash Island light, these lighthouses have been automated. The U.S. Coast Guard maintains the aids to navigation within the lighthouses.

All the lighthouses except Two Bush are on the National Register of Historic Places. However, the Service is responsible only on Libby Island, Egg Rock, and Matinicus Rock for maintaining the lighthouse to natural historic preservation standards. The Service is also responsible for maintaining these standards on the Petit Manan Island lightkeepers house and outbuildings. The historic lighthouses on Franklin, Pond, and Petit Manan Islands are the responsibility of the Coast Guard.

Historically, we have lacked adequate funding to maintain all the lighthouses and historic structures found on these islands. Without adequate funding and the assistance of lighthouse Friends Groups or other agencies and organizations, it will be difficult, if not impossible, for us to meet these legislated responsibilities.

While the Draft and Final EIS alternatives included a requirement to maintain the registered historic lighthouses to minimum standards, the alternatives compared different levels of promoting their use and enjoyment.

3. How will we promote volunteer opportunities and a Friends Group?

At public scoping meetings, we heard a lot of interest in volunteer opportunities and initiating a Friends group for the Refuge. We began a formal volunteer program in 2000 and currently have 25 volunteers. Volunteers help with administrative, biological, and public use activities. In the fall of 2002, a Refuge Friends Group, Friends of Maine Seabird Islands, officially formed in the mid-coast area. Their community outreach efforts have tremendously benefited the Refuge.

The Draft and Final EIS alternatives evaluated different levels of support for volunteers and establishing other Friends groups in downeast Maine.

4. How can we provide technical assistance to others interested in managing for wildlife and habitats?

The need to provide technical assistance to interested island owners, land trusts, and private organizations was identified by many as an important issue. Those who own coastal nesting islands aren't always certain of their significance and what needs to be done to maintain the values that make the islands so special for wildlife. The Service's Gulf of Maine Program helps provide technical assistance and routinely identifies and distributes information about potential sources of funding. Many people feel this fills an important need and should be continued. Our staff could complement this effort by providing technical assistance more specifically on habitat management techniques.

The Draft and Final EIS alternatives evaluated different levels of providing technical assistance.

Issues Outside the Scope of this CPP

These issues were brought up by the public or by the planning team during the scoping process. In some instances, the Service does not have any, or only limited, regulatory or jurisdictional authority over the issue. Other issues may be covered under other Service programs, initiatives, or planning projects. Some of the concerns implicit in these issues were addressed in Draft and Final EIS, Chapter 4: Environmental Consequences. However, all of these issues are considered outside this document's stated purpose and need for action and, thereby, do not fall within its scope of analysis.

1. How will we affect aquaculture operations adjacent to coastal nesting islands?

Aquaculture is important to the local and State economies in Maine. In Chapter 3, we provide a summary of the current state of Maine's aquaculture industry.

Many people expressed opinions on the benefits of this industry to local communities and the coastal ecosystem. Some people are concerned that Service ownership of islands will adversely impact present and future aquaculture operations by imposing restrictions. Industry supporters are particularly concerned about increased Service acquisition of islands coupled with the Federal-listing of wild Atlantic salmon as an endangered species in several Maine rivers. In their opinion, Federal acquisition will only continue to reduce the economic viability of an industry impacted by the salmon listing.

Some respondents suggested that aquaculture pens are beneficial as they can provide feeding, roosting, and loafing sites for birds. Fish-eating birds are commonly seen "pirating" fish reared in the pens. Other people, however, are concerned that the noise and activity from aquaculture operations at off-shore facilities may disturb nesting birds on nearby islands. In addition, they feel that disease control, feeding, and waste products at facilities cause pollution.

Some people were not opposed to aquaculture operations per se, but they believe care should be taken to select suitable sites away from known bird nesting islands. Finally, there are some people who do not believe there is any impact on the ecosystem.

The aquaculture issue is complicated and by no means inconsequential; however, we do not believe it warrants a detailed analysis within the context of this CCP. The industry is faced with many challenges, none of which are the direct result of Refuge programs. These challenges include a combination of health and environmental problems, such as infectious salmon anemia, the Federal-listing of Atlantic salmon as an endangered species, competition from foreign producers, and the lengthy lease process.

A prospective aquaculture operator must undergo both a State and Federal review and permitting process prior to obtaining the necessary leases. The State review is generally initiated first. Both the Maine Department of



Aquaculture pens at Libby Islands, 1994
USFWS photo

Marine Resources (DMR) and Department of Environmental Protection (DEP) review and decide on whether to issue State permits. In addition, the Maine DEP has been delegated authority by the Federal Environmental Protection Agency (EPA) to insure operations comply with the Clean Water Act. Unless a Federal-listed species is involved, the Service may not be consulted at this stage.

The Federal permits in Maine are then reviewed and approved by the U.S. Army Corps of Engineers (ACOE). When a permit application is submitted, the ACOE shares the permit application with the Service's Ecological Service's Maine Field Office for a review and recommendation. This review is required under the Fish and Wildlife Coordination Act and the Endangered Species Act. The Service does not have jurisdiction or management authority over coastal waters or the intertidal zone unless, as noted above, it is determined that a Federal-listed species may be impacted. Typically, the Maine Field Office recommendation is for the aquaculture facility to be located no closer than 1/4 mile from a Refuge island or other Federal-owned island, although this can vary depending on the size of the island and the species which might be impacted. This recommendation by the Maine Field Office is

non-binding. If a Federal-listed species, such as a nesting bald eagle, is documented near the prospective site, then the Maine Field Office would initiate a detailed review and recommendation process as required under Section 7 of the Endangered Species Act. The Refuge Program staff is not the authority responsible for this process; however, they will consult with the Field Office upon request.

The January 2004 report by the Governor's Task Force on the Planning and Development of Marine Aquaculture in Maine provides a wealth of information on the history and status of aquaculture in Maine and includes a total of 95 individual recommendations for improving the development of the industry while considering impacts on other uses and the environment (www.maine.gov/dm/aquaculture/aqtaskforce/finalreport.htm). One recommended best management practice is to insure that facilities do not unreasonably interfere within 1,000 feet of "important ecological, recreational, scenic, cultural, or historic" local, State, or Federal lands. Proposed amendments to current state lease decision criteria (sec. A-6.12 MRSA§ 6072, sub-§7-A) include:

7.A. Decision...

“(D) The lease will not unreasonably interfere with significant wildlife habitat and marine habitat or with the ability of the lease site and surrounding marine and upland areas to support existing ecologically significant flora; and

(F) The lease does not unreasonably interfere with public use or enjoyment within 1,000 feet of a beach, park, or docking facility owned by the Federal government, the State government, or a municipal government agency or certain conserved lands. For purposes of this paragraph, “conserved lands” means land in which fee ownership has been acquired by the municipal government, State Government or Federal Government in order to protect the important ecological, recreational, scenic, cultural, or historic attributes of that property”

In addition to the Governors task Force Report and proposed State rule changes for aquaculture leases, other management implications could arise from the Draft Recovery Plan for Maine Atlantic Salmon which was issued by the National Oceanic and Atmospheric Administration (NOAA) and the Service on June 18, 2004 for 90 days of public comments. This plan identifies 9 actions as necessary for the full recovery of the “Gulf of Maine Distinct Population Segment” including... “(3) reduce the risk from commercial aquaculture operations.”

The following reasons influenced our decision to not undertake a detailed analysis on impacts to aquaculture operations from implementing this Refuge CCP. First, the purpose of this CCP is to develop strategic management direction for our Refuge Program staff to implement on refuge lands. It does not provide direction for other Service programs, nor are we attempting to modify the current lease review process, or impose jurisdiction where we have no authority, as in State waters.

Second, there is a lot of uncertainty with predicting the locations and extent of future aquaculture facilities. This uncertainty restricts and compromises our ability to conduct a meaningful impacts analysis. In our past experience, we have been more concerned with the proximity of finfish operations to Refuge islands because these facilities and associated activity have more potential to disturb nesting birds. However, future locations for finfish facilities are the most difficult aquaculture operation to predict (Horne-Olson, pers com). Contributing to this uncertainty is the pending release of the final Atlantic Salmon Recovery Plan, which will address aquaculture issues, and establish actions necessary to de-list the species from the Federal Endangered Species list.

Third, it is our expectation that the release of the final Governor’s Task Force report, and a decision on the proposed State rule changes on aquaculture leases by the State, coupled with the pending Federal recovery plan, will provide the basis for public meetings on improving the governance and implementation of aquaculture in Maine. For example, recommenda-

tions on improving the lease process, establishing minimum buffer widths, implementing seasonal restrictions, and use of new technologies should all be discussed through this forum. It is through these public hearing processes that the Service may best be able to affect aquaculture practices to the benefit of natural resources.

Finally, the management direction in this Final CCP include resource monitoring at aquaculture sites in close proximity to Refuge islands with sensitive seabird and bald eagle nesting and feeding areas (Objective 4.3). The monitoring would be done in cooperation with State agencies, our research partners, and industry representatives. The information obtained would provide us with a more informed basis for analyzing future impacts.

Given the reasons noted above, and the purpose of this Final CCP, we determine it was not warranted to conduct a detailed impact analysis on the relationship of proposed Refuge management to the aquaculture industry in Maine.

2. Will we use eminent domain (condemnation) to take privately owned coastal nesting islands?

The Service, like all Federal agencies, has been given the power of eminent domain which allows it to condemn and acquire lands for the public good. Some island owners fear that the Service will condemn and take their islands without their consent. They also fear that if this happens they will not be adequately compensated for the real value of their island. Others believe the Service should use all of the tools at its disposal, including eminent domain, to conserve and protect coastal nesting islands.

Service policy is to acquire property only from willing sellers, at market value. None of our alternatives include the use of eminent domain. Therefore, we believed it did not warrant further analysis.

3. Will we take away or regulate private property owners' rights?

Some people believe the presence and involvement of the Federal government will result in the loss of some of their rights as property owners, ultimately affecting their ability to use their land as they see fit. This would effectively reduce the value of their land by preventing them from placing it in its "highest and best use." They believe that, even if the Federal government doesn't directly regulate or restrict their rights, local or State governments may pass new regulations because of Service interest in the nesting islands. Others feel very strongly that restricting property owners' rights to sell their land to anyone, including the Federal government, infringes on their individual rights. We have no authority in this planning process to restrict private property rights, or to manage private lands, nor have we ever expressed an interest in doing so unless under a partnership agreement. None of our Draft and Final EIS alternatives considered regulation of private property by the Service and, therefore, it does not warrant additional discussion.

4. How will we affect lobstering and other commercial fisheries near coastal nesting islands?

Lobstering and other forms of shell or fin fishing are important components of both local and State economies. The industry provides important jobs in local communities, and many believe it is a mainstay of the traditional culture of coastal Maine. Anything that threatens the viability of the industry is a concern to most people we spoke with. As with aquaculture operations, some people are concerned that Service ownership of islands will adversely impact present and future lobster operations by imposing restrictions. Other people support the industry, but request that the Service work closely with industry representatives to ensure that the fisheries vital to seabirds, wading birds, and bald eagles are not over-harvested.

Similar to what we presented in the aquaculture discussion, the Service has no jurisdiction over commercial fisheries, unless it is determined that Federal trust resources may be impacted. At this time, we determined this issue is outside the scope of this document. It did not make sense for us to evaluate new catch limits, new technologies, or other strategies given our limited ability to directly influence an outcome. This topic will not be addressed further in the CCP, except where we identify the need to initiate efforts to determine if there are potential impacts on Federal trust resources (Objective 4.2 and 4.3).

5. Will we affect existing local and State land use regulations?

There are a variety of local and State land use regulations regarding development on islands. Some towns do not have effective regulations or enforcement to conserve natural resources on coastal nesting islands. Many people are concerned that the lack of consistency in the enforcement of existing regulations threatens nesting islands. They fear that variances may be granted that will result in adverse impacts on important island

habitats and that current regulatory tools cannot adequately protect nesting islands. Others complain that these regulations unduly hinder their ability to make effective use of islands they own.

The Service does not have the authority to alter State and local land use regulations, although we can provide input through partnerships and technical assistance. Proposing changes to local and State land use regulations are outside the scope of this document and will not be addressed further.



Bald eagle chicks.
USFWS photo

Chapter 3



Lighthouse on Petit Manan Island
USFWS photo

Refuge and Resource Description

- Part One: The Refuge Landscape
- Part Two: Refuge Island Resources
- Part Three: Refuge Mainland Resources

Part One: The Refuge Landscape

Landscape-level Features

Since our project area spans the entire Maine coast, our description of the Refuge landscape focuses on the coastline, its resources and influences.

Gulf of Maine Ecosystem

This ecosystem is defined by the Gulf of Maine watershed; that is, the geographic area from which all water drains into the Gulf. It is an immense area, extending from eastern Quebec to Cape Cod, Massachusetts, with a land base of 69,115 square miles and a water surface of 33,054 miles. Maine is the only state located entirely within the boundary.

The Gulf of Maine is considered one of the world's most biologically productive environments. Its marine waters and shoreline habitats host about 2,000 species of plants and animals. The strategic location of underwater geologic features, such as Brown's Bank, allow nutrient-rich water from the deep ocean to flow upward over their edges, capturing phytoplankton in sunlit, shallow waters. Phytoplankton flourish here and are the basis of the gulf's food web. The riverine and upland habitats in the ecosystem also play an important role in the health and quality of the water flowing in the gulf. Many northern species (e.g. Atlantic puffin and razor-bills) find their southern limit in the Gulf of Maine, while the gulf represents the northern extreme for several southern species such as laughing gulls and roseate terns (Conkling 1995).

Physical Characteristics of Coastal Maine

Maine has more miles of coastline than any other state in the continental United States. A straight line measures the Maine coast as being less than 250 miles from border to border. Actually, there are 7,039 miles of coastline when the shores of its many bays and headlands are considered (Conkling 1999). Elevations range up to 178 feet above mean sea level. Topography along the Maine coast is a mix of gradual slopes to rocky shorelines and abrupt cliffs as high as 100 feet to the oceans below. Approximately 4,617 islands and major ledges lie along the coast (Conkling 1999).

Geology

The Maine coast has a long and complicated geologic history. The bedrock of the region was formed largely through igneous, volcanic and metamorphic processes during Paleozoic times. It has been affected by a variety of geologic events, including mountain building, erosion, sedimentation and glaciation (Griffith 1976).

The indented character of the Maine coast is typical of shorelines of recent submergence. Before Pleistocene glaciation, the Maine shoreline was several hundred miles further south. The mile-high sheet of ice (7 million

tons/acre) that subsequently formed across the state warped the crust downward along a tectonically weak zone running northeast-southwest that corresponds with the present configuration of the coastline. Later, enormous volumes of water released by glacial meltwaters contributed to a worldwide rise in sea level that inundated what had been coastal lowlands.

Geologically, the Maine coast can be divided into five distinct sections (Conkling 1995). The section from Kittery to Cape Elizabeth represents the northern end of the crystalline rocks characteristic of the Atlantic coast north of Cape Cod. Topographic relief is characteristically slight, and the shoreline straight. Maine's most famous beaches and thousands of acres of salt marsh are characteristic, but relatively few islands are located in this section of the coast.

The coast from Cape Elizabeth to the Penobscot River, including Casco, Sheepscot, Boothbay, John's, Muscongus, and Western Penobscot bays, is characterized by long, narrow arms of the sea which extend far into the coastal lowlands. Islands in this section of the coast are also generally long and narrow, trending just east of north, corresponding to the general trend of the bedrock: quartzites, slates, schists, and granite. The deep, elongated bays in this section represent old stream and river drainage systems that were carved out in the folds of the strata, then scoured by glaciers and later filled by rising seas.

The coast from Vinalhaven to Jonesport is primarily the realm of white and pink granites. This section includes the broad and wide East Penobscot, Jericho, Blue Hill, Frenchman's, Pleasant, and Eastern and Western Bays. There are more islands in this section than in any other; most are forested with spruce. In contrast to the long, narrow islands to the west, islands in this section, whether large or small, are mostly rounded and dome-like, owing to the manner in which the once liquid granite was emplaced and cooled amid overlying rocks. This section also includes the highest coastal mountains, and the only fjord-like feature (Somes Sound) on the U.S. Atlantic coast. To many, this section is the most spectacular scenic area on the coast.

East of the Roque Island archipelago, the bays broaden and shorten as more ancient volcanic rocks and volcanic breccia (consolidated debris from volcanic eruptions) dominate the landscape. East of Cape Wash, bays and islands disappear altogether until Cobscook Bay. Huge tides (20 feet at West Quoddy Head), increased fog, and rugged gray and dark-green cliffs, sea stacks, fewer people, and rare seabirds at the southern end of their breeding range characterize this section "way Downeast."

Soils and Hydrology

Soils were mainly deposited as the last glacier retreated some 13 to 15,000 years ago, leaving a soil cover mixture of sand, gravel, silt, and clay (Conkling 1995). Hydrology consists of bedrock aquifers underlying the

mainland portion of the state. “Sole source aquifer” is a designation given for every island off the coast and both tidal and non-tidal surface waters (Conkling 1995). Tidal waters include ponds, salt marshes, creeks, coves, and mud flats. The mean tidal range within the region tends to increase as one moves northeast along the coast. It ranges from 8.8 feet in Muscongus Bay to 10.2 feet at Southwest Harbor on Mount Desert Island (TRIGOM - PARC, 1974).

The non-tidal waters include marshes, bogs, ponds, creeks, artificial impoundments, and seasonally flooded forests. Non-tidal waters are mainly fed from annual precipitation or natural springs.

Climate

Maine’s weather is highly variable, and may vary on any given day from place to place. Large ranges in temperature are common, both daily and annually. In general, summers are cool and relatively dry, and winters are cold and wet. Maine has four distinct seasons. The climate of coastal Maine is strongly affected by maritime influences. In general, average coastal temperatures are cooler in the summer and warmer in the winter than in the interior of the state. The average annual temperature varies along the coast. For example, in southern Maine, the average temperature is 45 degrees, along the mid-coast, it is 44 degrees, and in the north, the average temperature is 40 degrees. The coastal region has the longest growing season in the state, averaging from 140 to 160 days per year.

The average annual precipitation in Maine is 42 inches. Along the coast, summer thunderstorm activity is suppressed somewhat by the cooling effect of the ocean, while winter precipitation is increased by the occurrence of coastal storms blowing from the northeast, or “nor’easters.” They often bring with them strong winds and heavy precipitation occurring either as snow, rain, or freezing rain. The result is greater precipitation in winter than in summer. Winter precipitation falls mainly as rain or wet snow along the coast, which is also subject to occasional ice storms that cover every exposed surface with a sheet of ice. At times, nor’easters produce unusually high wind-driven tides that can seriously affect coastal beaches and settlements. Fog is particularly frequent in downeast Maine, generally diminishing in frequency and duration in an inland direction and to the south.

On a yearly basis, the wind direction is generally from the west. In winter, winds typically originate from the northwest or north, and in



The Gulf of Maine is the southern limit of the Atlantic puffin's range
USFWS photo

summer, from the southwest or south. In spring and summer, the sea breeze is an important factor along the coast. Cool breezes off the ocean tend to retard spring plant growth and moderate summer temperatures. In winter, sea breezes moderate temperatures on land.

Air Quality

Both State and Federal agencies monitor air quality in response to State and Federal requirements to determine whether the air we breathe is maintaining ambient air quality standards designed to protect the health and welfare of the public. In addition to human health, good air quality is essential to sustaining healthy ecosystems. Healthy and productive vegetation, wildlife, water, and soils, and the protection of visibility, and geological, archeological, historical, and cultural resources are all values associated with clean air.

According to the State of Maine DEP, the state exceeds acceptable levels for particulates, sulfur dioxide, and carbon monoxide (ME DEP; www.state.me.us/DEP/pubs/environment 2002). The primary concern is ground ozone levels in southern counties. A particular health hazard with ozone is the fact it aggravates asthma and other chronic lung diseases. The precursors to ozone are emitted in automobile exhaust, gasoline, and oil storage and transfer, and from common use of paint solvents, degreasing agents, cleaning fluids and similar materials. Unfortunately, some of these compounds are generated in western regions of the country and are carried to Maine by prevailing wind patterns, so efforts to reduce levels are challenging.

Ozone formation is temperature dependent and is more likely to form in the warmer summer temperatures. In 1989, there were 12 days when Maine exceeded the Federal standards for acceptable 8-hour ozone level days. This has been declining, and in 2001, there were 7 days in which the 8-hour levels were exceeded.

Air toxics are another serious concern in Maine. Benzene concentrations are used as an indicator for other hazardous air pollutants. One of the primary sources for these chemicals is car exhaust and evaporation of gasoline during refueling. Over the past 8 years, benzene concentrations were highest in 1994 at 0.9 ppb, decreased to 0.4 ppb in 2000, but then increased to 0.7 in 2001 (ME DEP; www.state.me.us/DEP/pubs/environment 2002).

We do not have air quality monitoring stations on the Refuge, so we have limited local information. Instead, we look to air quality monitoring conducted on Moosehorn Refuge, located in Barre, Maine. In 1978, Congress designated the 7,000 acre Moosehorn Refuge Wilderness Area a Class 1 air quality area. Class 1 areas receive the highest levels of protection under the Clean Air Act. Our National Air Quality Program has an

established air quality monitoring station to measure compliance with Federal standards.

Most of the air pollutants affecting Moosehorn Refuge would likely also occur at the Refuge (Porter, pers com, 2002). Pollution sources include power plants, industry (such as pulp mills), and automobiles. Pollutant haze often reduces visibility in the wilderness area. Occasionally, smoke plumes from nearby industry drift into the area. The area receives acid rain (and acid snow, fog, and dryfall), with a pH of about 4.6. Acid rain is the broad term used to describe several ways that a weak solution of inorganic acids, such as nitric and sulfuric acid falls out of the atmosphere as rain, snow, mist or fog. Sulfur dioxide and oxides of nitrogen are the primary causes of acid rain. Most of this comes from electric-power generation that relies on burning fossil fuels, such as coal. Acidification in surface water is an increasing concern.

In addition, it is likely that mercury deposition from the atmosphere and bioaccumulation is occurring in the area at a rate similar to that demonstrated in Acadia National Park and the Penobscot River valley. Mercury becomes airborne through burning coal, oil, wood, or natural gas, incinerating mercury-containing garbage, and through industrial processes that use



Short-billed dowitchers
Photo by Craig Snapp

mercury. Contaminant research has documented increasing concentrations of mercury in various species of wildlife as you move eastward across the country, with the highest documented levels recorded in Maine (Evers pers. comm.). Mercury bioaccumulation in fish has prompted the State of Maine to advise certain at-risk persons not to eat fish from lakes and ponds in the state.

The monitoring at Moosehorn Refuge includes documenting the cumulative effects of these air pollutants and their injury to vegetation, wildlife, soils, water quality, visibility, odor, and cultural and archeological resources. Surveys in the wilderness area in 1998 to 2001 documented symptoms of ozone injury, such as stippling and chlorosis, on several plant species. Vegetation such as black cherry, milkweed, and wild grape are all readily subject to such injury.

Acadia National Park also has two air quality monitoring sites at McFarland Hill and Cadillac Mountain. Pollutants monitored include: ozone, nitrogen oxides, fine particulates, visibility, mercury, acid deposition, UV-b radiation, precipitation and other meteorological parameters. In 2001, the park recorded 10 days when the air was unhealthy to breathe due to ground-level ozone levels. Park studies have shown numerous plant species harmed by ozone exposure including black cherry, quaking aspen, and decreased growth rates in eastern white pine.

The estimated annual average visibility at the park is 110 miles. Air pollution reduces visibility during the summer months to approximately 33 miles, dropping to only a few miles on the haziest summer days. Sulfur dioxide and nitrogen oxide are affecting surface waters of the park. Its rocky soils give streams and lakes little protection from acid rain. The average pH of precipitation measured has ranged from 4.4 to 4.6. This value is ten times the acidity of natural rainfall. Park staff have measured acid fog with a pH of 3.0, comparable to grapefruit juice. Fish with high levels of mercury have been documented in its lakes since the early 1990's. Mercury concentrations in some species of warm water fish, such as bass, perch, and pickerel, are among the highest ever recorded in the U.S. (www.npca.org)

Water Quality

Assessments of estuarine, riverine, lakes, and coastal water quality is done primarily by two state agencies: the Department of Marine Resources (DMR) and the Department of Environmental Protection (DEP). The DMR conducts an extensive program to monitor pathogen indicators and phytotoxins. The purpose of this program is to manage the risk of human illness due to consumption of contaminated fish or shellfish. The DEP's Marine Environmental Monitoring Program monitors and researches other water quality issues within the 7,039 miles of shoreline and near-coastal waters. Three other coastal projects also collect water quality information

on a site-specific or project-specific basis. The Casco Bay Estuary Project has supported several monitoring projects within Casco Bay. Maine's Shore Stewards Program supports a diverse array of volunteer monitoring groups that operate in specific embayments and estuaries. The Gulf of Maine Council's Gulfwatch Project surveys toxic contamination in coastal waters from Cape Cod to Yarmouth, Nova Scotia.

Both point and nonpoint source pollution affect the quality of Maine's waters. Point source pollution occurs from a single discharge point; nonpoint pollution sources are those that can come from numerous sources in the watershed, typically as runoff from the land. Point source pollution include sewer overflows, sewage pipes leading directly to the water, and industrial discharges from paper mills and other manufacturers. Nonpoint source pollution includes nutrients, bacteria, sediment, oil, and heavy metals that are transported to water bodies from different sources by runoff from storms. This threat is much harder to manage and control, and is exacerbated by development and increased impervious and polluted surfaces.

No water quality monitoring is occurring on the Refuge, so we are unsure how directly our waters are affected by these pollutants.

Estuaries

An indicator of the water quality in Maine's estuaries used by ME DEP is the amount of area closed to shellfish harvesting in a given year. As of June 2001, 156,758 acres of flats and waters were closed to shellfishing, a slight decrease from the 166,555 acres closed in October 2000 (ME Development Foundation, January 2002; www.smartgrowth.org). Sewage discharges from malfunctioning septic systems, straight discharge pipes, and non-point source pollution are responsible for closing the shellfishing areas (ME DEP; www.state.me.us/DEP/pubs/environment (2002.pdf).

Rivers, Streams and Brooks

An indicator of the water quality in Maine's rivers, streams and brooks used by ME DEP is the number of miles that were not able to support one or more of their designated uses, including fishing, aquatic life, and swimming, and were not in attainment of water quality standards in sections 305(b) of the Federal Water Pollution Control Act. In 2000, 749 miles of the estimated 31,752 total miles of rivers, stream, and brooks, were estimated to not fully support one or more of their designated uses. Of those, 427 miles of river did not support fishing, 331 miles were unfit to support aquatic life, and 176 miles could not support swimming. Several rivers were unable to support more than one type of use (ME Development Foundation, January 2002; www.smartgrowth.org). Fortunately, since 1994, sewage effluent discharged into Maine rivers has decreased by 20%.

Lakes

There are 5,788 lakes in Maine, and 2,314 are deemed significant by ME DEP. Using suitability for swimming as an indicator, only 3.8% of the significant lakes were deemed unsuitable for swimming in 2000, according to ME DEP. This is an improvement over 1998 figures, when 5.3% of significant lakes were not swimmable. More detailed water quality monitoring has occurred in 224 Maine lakes for the last eight years. Data shows that 67% of those lakes have a stable water quality; an additional 25% are improving; and 8% are declining.

Groundwater

Groundwater is Maine's primary source of drinking water and protecting its quality is critically important to the health of Maine's citizens. Groundwater is defined as water contained in open spaces in the soil, sand, and gravel within rock fractures. The water comes from rain or melting snow that seeps into the ground and is stored in geologic structures. In most cases, groundwater is polluted through non-point sources, namely contaminated snowmelt or rain. While these waters are filtered through the soils before reaching the aquifer, it is often not enough to remove contaminants such as salt, oil, gas, and lead from roads, pesticides and fertilizers from home gardens and landscaping, effluent from septic systems, and substances disposed of on the ground by homeowners. Point sources, such as those from development near primary aquifers, or petroleum leaks at gas stations and homes, are also important threats. In 1994, 54 public and private wells were replaced due to petroleum contamination of their water source. Since that peak, the number has declined, with only 35 wells needing replacement in 1999 due to contamination (ME Development Foundation, January 2002; www.smartgrowth.org)

Socio-economic Characteristics of Coastal Maine

It is said that Maine's seacoast is the backbone of the State's economy. This is not surprising as coastal Maine's southern and mid-coast regions are growing at almost twice the rate than the state as a whole during 1990-1996. The majority of the State's residents live in coastal counties. It is the natural beauty and rich resources of the shore and ocean that draw people to the coast.

Demographics

The population of Maine is estimated at 1,274,923 with an average density of 41.3 persons/ square mile (U.S. Census, 2000; <http://quickfacts.census.gov/qfd/states/23000.html>). The top three counties with highest population densities are: Cumberland (318 persons/square mile), Androscoggin (221 persons/square mile), and York (188 persons/square mile). All are located in southern and mid-coast Maine. The eight coastal Maine counties and their populations are depicted in Table 3-1.

**Table 3-1 Populations of Eight Coastal Maine Counties
(U.S.Census 2000)**

Coastal Maine Counties	Population
Cumberland County	265,612
Hancock County	51,791
Knox County	39,618
Lincoln County	33,616
Waldo County	36,280
Washington County	33,941
Sagadahoc County	35,214
York County	186,742

A Brookings Institution report in July 2001 listed Portland as the 9th fastest growing metropolitan area in the nation. Between 1982 and 1997, its population increased by 17%. Between 1990 and 2000 the state population increased by only 3.8%. Other populated cities and towns along the coast are Kittery, York, Wells, Kennebunkport, Biddeford, Saco, Yarmouth, Freeport, Brunswick, Bath, Boothbay Harbor, Damariscotta, Rockland, Camden, Belfast, Bucksport, Ellsworth, Bar Harbor, Machias, and Calais.

The State Planning Office estimates that between 1970 and 1990, land development in Maine occurred at four times the rate that the population increased. People are moving away from villages and city centers into the countryside. This situation creates sprawl, which is characterized by low-density development that is center-less and sporadic, strip malls, and traffic congestion. If unchecked and unplanned, sprawl impacts our health, our environment, our communities, and our productive agricultural and natural areas. The city of Portland serves as a prime example. During 1982 and 1997, when Portland's population increased by 17%, the amount of farmland and forestland converted to urban uses increased by 108%.

According to the 2000 U.S. Census, the majority of people are employed in the fields of "management/professional/and related occupations," followed by "sales and office occupations." The mean household income, including benefits, in the state is approximately \$47,000. Approximately 95% of the population is white and retirees are disproportionately concentrated in the southern coastal towns.

Industries of Coastal Maine: An Overview

According to the 2000 U.S. Census, the top three industries in Maine are, in order: 1) "education/health/and social services;" 2) "retail;" and 3) "manufacturing." Many of the State's top three industries are dependent on natural resources. A comprehensive bibliography on how natural resources contribute to Maine's economy is provided in Maine Audubon Society's publication: *Valuing the Nature of Maine, May 1996*.

In northern and eastern Maine, industry output is dominated by the pulp and paper industry. Along with wood products, it represents the major industry exporting products outside the area. After pulp and paper, the primary industries in eastern Maine are retail trade, construction, and health services (www.emdc.org.CEDS2000). Unfortunately, only the pulp, paper and wood industries consistently pay the state’s “livable wage,” and these industries are in a difficult investment climate.

A few prominent natural resource-based industries with ties to the Refuge are presented below.

Aquaculture and other commercial fisheries

The Maine aquaculture industry is very diverse and has grown significantly over the past decade. It consists of businesses involved in raising and selling salmon, trout, oysters, mussels, and baitfish. According to a recent report by Planning Decisions Inc., all Maine aquaculture activities account for \$130 million in total, annual economic activity in Maine (O’Hara et. al., 2003). Two major subsectors exist in the industry: finfish, primarily salmon, is generally undertaken east of Penobscot Bay, while shellfish culture, is generally located in or near the Damariscotta River. In 2000, the salmon aquaculture industry produced a total of 36 million pounds of salmon, with a total landed value of \$78.9 million (Colgan 2002). This was the peak year for the decade. In 2002, there was a slight decline, when 15 million whole pounds of salmon were produced. In addition to direct salmon production, there is additional value added and higher than state-average paid employment in processing facilities, hatcheries for salmon smolt at various inland lake locations around the state, grow-out operations, fish health companies.

Aquaculture operations require a permit from the Army Corps of Engineers and a lease from the State of Maine. As of June 2004, a total of 150 sites were under lease. Table 3-2 shows the distribution of these sites (source: ME DMR, 2005)

Table 3-2 Aquaculture operations in Maine under lease as of June 2004

Product	Number of leases	Acres under lease
finfish	40	740.0
shellfish	63	570.0
limited purpose	31	0.3
experimental	16	29.0

State records do not indicate which of these leases are currently active. As such, not all of this leased acreage may be in active production.

The industry has faced many challenges in recent years. The amount of active acreage has been affected by Infectious Salmon Anemia (ISA), a

highly contagious disease which resulted in the destruction of over 1.1 million pounds of salmon in order to control the spread of the disease, primarily in the Cobscook Bay area (Colgan 2002). Other declines in production from 2000 to 2002 were due to health and environmental problems (O'Hara et al. 2003). In addition, the listing of the wild Atlantic salmon as an endangered species in the rivers of eastern Maine may have effects on the cultured salmon industry from restricted production or increased costs.

Salmon aquaculture is a highly competitive industry in which foreign producers play a major role. Competition from Chile and Norway has been found by the U.S. International Trade Commission to have materially harmed the U.S. industry, including producers from Maine (Colgan 2002). Finally, aquaculture leases are difficult to obtain from the State of Maine, in part because of frequent local opposition to the issuance of new leases, and in part, because of a lengthy lease application process. A bill to place a moratorium on aquaculture leases for two years was considered by the Maine Legislature in 2002.

Lobstering is the principle fishing activity associated in the vicinity of coastal islands. Lobsters are caught year-round in Maine, but during the summer, lobsters migrate inshore to molt and are caught near shore, including around islands. Depending on water depth and bottom type, lobster traps may be placed quite close to shore, but this varies. Lobsters are the single most valuable fish species caught in Maine. Both total landings and the landed value of lobsters have grown significantly over the past 15 years. In 2001, over 48 million pounds of lobster were harvested with a market value of \$151.9 million.

The remaining top 10 economically important fisheries in the state include Atlantic salmon, sea urchin, soft clam, cod, flounder, sea scallop, bluefin tuna, shrimp, and witch flounder. All fishery species harvested in Maine in 2001 totaled \$241,287,429 in value and 236,268,682 pounds (www.st.nmfs.gov).

Tourism

Tourism is significant to the Maine economy. In 2000, nonresident visitors to Maine directly and indirectly generated: \$8.8 billion in sales of goods and services; over 116,000 jobs; and, \$2.5 billion in total payroll (Maine Office of Tourism, www.visitmaine.com). This represents 44.0 million trips to Maine, predominantly to coastal areas and mostly during the summer months. Reportedly, overnight visitors come to tour the state (41%), enjoy the outdoors (20%), attend a special event (10%), and for a beach vacation (9%).



Commercial wildlife watching tour boat
USFWS photo

Many people come to the state or travel within the state to engage in wildlife watching. This would include activities such as observing, identifying, photographing, or feeding wildlife. The total number of wildlife watching participants nationally was 66,105,000 in 2001, a 13% decrease from 1991 figures (USFWS 2002). Maine ranks fourth among U.S. states for having the highest percentage of its population engage in wildlife watching; 52% participates. Wildlife watching trip related expenditures in Maine amounted to \$64,202,000 in 2001. The national average for wildlife watching expenditures per trip was \$448 (USFWS 2002).

Seabird Viewing

Commercial seabird viewing is one wildlife watching activity that warrants a detailed discussion because of its connection with the Refuge. Petit Manan and Machias Seal islands serve as premier seabird viewing destinations for several commercial tour boat operators.

The abundance of seabirds along the Maine coast, coupled with the large number of summer visitors has created a substantial opportunity for firms to provide a variety of services to view seabirds. In order for us to assess the extent of commercial seabird viewing in Maine, and understand the importance of the Refuge to this opportunity, we enlisted the University of Southern Maine for help. Dr. Colgan and students conducted a series of interviews with seabird viewing firms in Maine during the summer of 2001. The results of his work follows.

One hundred and thirty eight companies were identified as providing services potentially involving seabird viewing as a recreational activity. The companies were identified from tourism reference sources, chambers of commerce, and other sources, and were contacted by phone to inquire about the number of customers, average prices, and extent to which seabird viewing was considered a part of the recreational experience. Of these, 120 provided services in coastal waters. The firms are located throughout the coast (Table 3.3), with about two thirds located in the Penobscot Bay area or to the east.

Table 3-3 Distribution of coastal excursion companies. Source: USM Survey

Maine Coastal Counties	Percent Distribution
Cumberland	4.3%
Hancock	21.5%
Knox	36.6%
Lincoln	21.5%
Sagadahoc	1.1%
Washington	6.5%
Waldo	1.1%
York	7.5%

The companies provide a wide variety of services, from multi-day trips on schooners to 2-6 hour guided sea kayak tours. There are also various types of nature watching services. The most common are whale-watching tours, which often include seabird viewing. There are also dedicated seabird viewing excursions. Prices average about \$60 for a full day excursion, \$36.00 for an excursion that last one to four hours, and \$425 for multi-day excursions.

Firms that were willing to provide figures on total number of visitors taking their excursions reported a total of 156,000 trips per year. Of these, 2,700 trips were on excursions where the primary purpose was seabird viewing, while 127,000 took trips whose secondary purpose was seabird viewing. Adjusting from the sample to the total population implies 5,000 to 7,500 trips primarily for seabird viewing and 350,000 to 450,000 trips with seabird viewing as a secondary purpose.

Based on information provided by the companies, 10-15% of the companies offer services that are predominantly focused on seabirds, 25-30% indicate that seabird viewing is an important part of their services, and the remainder indicate that seabird viewing is incidental to other experiences. More than 95% of the trips taken are of less than one day's duration.

Total spending by visitors on coastal excursions in which seabird viewing plays some role is estimated at \$6.24 million in 1990 among survey respondents. The response rate for the surveys was about 33%, which imply

total spending of \$15-25 million a year taking into account sample size. However, as noted seabird viewing is only part of the recreational experience, so these figures need to be adjusted downward to reflect the proportion of activity related to seabirds as reported by survey respondents. When this is done, the sample estimated \$2.3 million in spending, resulting in a total estimate of \$5-10 million in seabird related spending in 2001.

The economic values associated with recreational seabird viewing not tied to commercial trips is also very significant. People who regularly view seabirds as either part of their coastal recreation or as a primary element in their personal recreation activity constitute a significant population. Since this group does not pay a per-trip fee to enjoy seabirds, other means are employed to assess the economic value associated with this recreation. A means employed to assess values from recreational seabird viewing for our project is described below, with a detailed description of the overall economic impact presented in the final EIS, Chapter 4.

In 1996, Dr. Colgan was enlisted by the Service to conduct a mail survey to develop information about the scope of this recreational activity. The survey was sent to members of the MITA and Maine Audubon Society who had actively participated in bird watching activities or who had indicated particular interest in bird watching as a recreation activity. The survey results showed that those engaged directly and indirectly in coastal seabird viewing come from a wide geographic area. Forty-five percent of respondents were from outside Maine, with more than 30 states and one Canadian province represented. The final EIS, Appendix H, provides a summary of the data collected.

A total of more than 10,500 annual trips for seabird viewing was reported in the survey, although this number is somewhat difficult to estimate since many of the respondents live on the Maine coast and report that bird watching is part of their daily routine as opposed to a specific recreational activity.¹ However, it is important to note that, while Maine residents were naturally the most frequent visitors to the coast for bird-watching, non-residents also reported frequent visits.

The Maine Audubon Society portion of the survey was addressed to members who had a specific interest in bird watching, so their reported visits were directly related to recreation involving coastal birds. Members of the MITA, on the other hand, engage in a variety of recreation activities along the coast, includ-



Pied-billed grebe
USFWS photo

¹ Year-round residents were counted as 200 visits for purposes of the analysis.

ing kayaking, sailing, and, camping. A specific question was addressed to MITA members about the extent to which bird-watching was part of their island-related recreation activities. Over 90% of the respondents from MITA considered bird-watching either a regular or an occasional part of their recreation activity.

The survey also asked respondents which of six areas along the coast they most frequently visited for bird-watching. The responses indicated that the area between Portland and Penobscot Bay is the most popular area, although activity is spread throughout the coast.

Forestry

Timber is an important economic crop along coastal Maine and is also important to the state's cultural identity. While acres in timberland across the state have remained fairly stable, the amount that can be used for timber harvesting has declined due to sprawl. The forest and paper industry's existence depends on maintaining both ownership and access to timberland; both of which are compromised with sprawl. The biggest loss of timberlands is occurring in southern counties such as Cumberland and York. Between 1989 and 1995, the amount of timberland in these counties had declined by over 13% (Maine Development Foundation; www.smartgrowth.org). While the vast majority of timber activities occurs on the mainland, some also takes place on the coastal islands. On islands, trees are harvested for firewood or other small woodlot management needs, or to open small fields for agriculture.

Blueberry Production

Similar to timber, blueberries are an important economic crop in Maine with deep cultural roots; in fact, blueberries are one of Maine's chief

export products. Sixty thousand acres in Maine are covered by wild blueberry production. Maine is the largest producer of wild blueberries in the world, and accounts for 25% of all blueberry production in North America. Maine's 2003 wild blueberry crop totaled 80.2 million pounds, an increase of 29% from 2002. The total processing value was \$27.9 million (NASS, 2004). Management of blueberry fields often includes burning to enhance production, and pesticide and herbicide application to control pest species. In Washington County, where the Refuge Headquarters is located, approximately 10,000 acres are burned each spring.



Blueberry field on Petit Manan Point
USFWS photo

Hunting and Fishing

Hunting and fishing activities generate a sizeable income to the economy of Maine. A study by the University of Maine describes a \$329.9 million and \$196.2 million economic output for hunting and inland fishing, respectively, in Maine in 1996 (Teisl and Boyle 1998). Both of these activities provide wage and employment benefits across many sectors of Maine's economy. While fishing is significant elsewhere in the state, the Refuge has very limited opportunities for this activity, and therefore, we do not further describe this activity below.

Maine ranks third in the U.S. in having the highest percentage of in-state, big game hunters (USFWS 2002). In 2001, there were 164,000 total hunters in Maine; 95% were hunting big game, 39% were hunting small game, and the number for migratory birds was negligible. Trip-related expenditures for Maine hunters amounted to \$53,779,000; a 17% increase in expenditures compared to 1991. These expenditures include food, lodging, transportation, and other trip costs such as equipment rentals, land use fees, etc. The 2001 national averages for expenditures by a hunter per trip were \$327 for big game, \$167 for small game, and \$222 for migratory birds.

Environmental Education

Environmental education is virtually an industry unto itself in coastal Maine. Programs are sponsored through a variety of Federal and State agencies, private businesses, media outlets, and non-profit organizations. These groups provide a range of opportunities to learn about coastal Maine's environmental resources through written materials, educational programs in classrooms and in the field, and public forums. Target audiences for environmental education are as varied as the environmental organizations themselves. Land-use decision-makers, lawmakers, land trusts, other conservation groups, outdoor users, instructors, schoolchildren, college students, state residents, and vacationing visitors are all potential audiences for Maine's environmental education initiatives.

According to a comprehensive survey completed in *The Wild Gulf Almanac* in 1995, Maine hosts the following range of organizations and land bases that support or engage directly in environmental education:

- 29 educational organizations and programs
- 29 governmental organizations involved in environmental protection
- 10 museums and aquariums
- 21 non-profit conservation groups
- 1 National Park

- 1 National Estuarine Research Reserve
- 2 National Fish Hatcheries
- 1 International Park
- 1 Wilderness Waterway
- 9 National Wildlife Refuges
- 28 state parks and 12 state historic sites
- many nature preserves managed by non-profit conservation groups

In addition, there are 70 land trusts, approximately 20 water quality monitoring groups, and numerous environmentally-based tourism industries.

Environmental education is incorporated, to varying degrees, in the curriculums of Maine's public and private schools. Some school programs are self-managed while others rely on the assistance of the entities noted above. Interestingly, the many environmental organizations vary widely in their offering of educational opportunities. Some, like The Chewonki Foundation and Maine Audubon Society, have a broad diversity of environmental education programs, accommodating many subject areas. Others, like Acadia National Park, are focused on coastal resource protection and recreational opportunities. Some, like the Natural Resources Council of Maine, Conservation Law Foundation, and RESTORE, focus on environmental advocacy, but support environmental education as a critical component of successful advocacy. Groups like Maine Island Trail Association and some private ecotourism businesses, promote educational programs that encourage appropriate use, enjoyment, and stewardship of coastal environments. Finally, groups like The Nature Conservancy and Maine Coast Heritage Trust direct their energies to land protection, but support education that leads to public understanding, appreciation, and ultimately, long-term protection of coastal resources.

Real Estate and Land Development

As discussed above, land development has increased in many areas, especially along Maine's coastal areas. Historically, when the economy in nearby urban areas, such as Boston and New York is doing well, there is tremendous pressure for second home development on both the mainland and islands in Maine. The economic boom of the 1990's has resulted in healthy real estate sales in coastal areas. While environmental issues with sprawl are noted above, a healthy real estate market also results in increased property values and increased property tax revenues to towns.

Average property tax values per acre along coastal Maine range between a low of \$122 and a high of \$28,400, with a mean value of \$4,300 per acre. In general, property values are higher in southern coastal areas than in downeast coastal areas.

On coastal islands, several factors influence opportunities for development. The major factor is cost, including the current market value for islands, the location of and access to the island, the topography of the island for building, protection of the island from storm events, access to water, availability of sewage disposal facilities, and other costs such as taxes.

Recreational Uses on Coastal Islands

Most of what is described above relates to the mainland. However, it is important to recognize there is a large seasonal demand for access to Maine coastal islands because they offer a unique experience. There are many ways for the public to access islands in Maine, depending on the ownership. The Maine Island Trail Association (MITA) maintains the Maine Island Trail, a 325 mile waterway extending from Casco Bay on the west to Machias Bay on the east. This trail includes 104 public and private islands open to visitors; some are day use only, others are open to day use and camping. Two Refuge islands are part of the MITA trail and open to overnight camping: Bois Bubert and Halifax islands. Other details on access to specific Refuge islands are described in Part Two of this chapter.

Other public and private islands are also open to the general public. Acadia National Park allows access to several of the park's islands; access is primarily by private boat. All of the islands owned by the State of Maine are open to the public, accessed by private boat. Some of these islands are State parks; others were acquired to protect habitat for nesting seabirds. The nesting islands are closed to the public during the nesting season. The coastal islands owned by The Nature Conservancy are open to the public. They may offer occasional trips and tours, but generally visitors access these islands using private boats.



Aerial view of Halifax Island
USFWS photo

There are many commercial companies offering trips to visit coastal islands in Maine. These include bird viewing tours, kayak tours, windjammer cruises, lobster tours, and others. People also use mail boats and ferries to access islands.

Maine islands have historically been used for such non-consumptive recreational uses as picnicking, hiking, wildlife observation, photography, and camping. Consumptive uses include berry picking, fishing and shellfishing, and sport hunting for waterfowl (including eiders), upland game birds, and deer.

Refuge Administration

Administrative Organization

As described in Chapter 1, the Maine Coastal Islands Refuge includes five individual refuges. A sixth refuge, Sunkhaze Meadows, is administratively grouped with the Refuge, but will not be evaluated in this document. A separate CCP effort is planned for approximately 2010 for this refuge. Resources shared with Sunkhaze Meadows Refuge include supervision, administrative support services, and field biological staff. A brief description of the resources on Sunkhaze Meadows Refuge is provided below.

Sunkhaze Meadows Refuge

Sunkhaze Meadows Refuge is approximately 10,300 acres, located in the Town of Milford, Penobscot County, Maine, approximately fourteen miles north of Bangor. The refuge is the second-largest and most unique peatland in Maine, and also contains a portion of Sunkhaze stream and extensive streamside wetlands. The refuge is open to big game hunting, upland game hunting, and waterfowl hunting. Sunkhaze stream is a very popular trout fishing stream. Nonconsumptive uses occurring on the refuge include canoeing, cross-country skiing, environmental education and interpretation, wildlife observation and photography, research, and snowmobiling. Carlton Pond Waterfowl Production Area is also managed by the refuge. It is a 1,068-acre marsh located in the town of Troy in Waldo County. In the early 1990's, the Benton and Sandy Stream Divisions were added to the Refuge under the auspices of the 1990 Farm Bill. Located in the towns of Benton and Unity, both are managed for grassland nesting birds.

Refuge Offices

We have two Government Services Administration-leased office buildings in the Towns of Milbridge and Rockport. Our Milbridge office, established in 1997, is considered the Refuge Headquarters and consists of 5,250 square feet of space, 50% of which is dedicated to boat storage and maintenance operations. The office portion provides adequate space for the current four permanent employees, but lacks storage and filing space, and does not provide office space for additional staff. We rent commercial storage space to meet these needs.

Our Rockport office was opened in 1999 and consists of 2,250 square feet of space; approximately 50% is administrative office and 50% is boat and other equipment storage. The office currently meets the needs of two permanent employees and an office for the Refuge Friends Group, Friends of Maine Seabird Islands.

We have been evaluating moving the Refuge Headquarters to mid-coast Maine in conjunction with a proposal to develop a mid-coast environmental education center. The Milbridge office would then become the downeast satellite office. In May 2001, we convened a team of people



Rockport Office
USFWS photo

representing the Service, Maine Bureau of Parks and Lands, Maine Audubon Society, Maine Island Trail Association, Coastal Mountains Land Trust, Maine Coast Heritage Trust, and Tanglewood 4H Camp to discuss a proposal for a new facility. The team developed three purposes for the facility: 1) to provide interpretive and educational programming and exhibits; 2) to facilitate administration of the Refuge; and, 3) to support Refuge operations. We held a public meeting in May 2001 in Rockport to present the proposal, and Congressional representatives were briefed at this time. There was unanimous support for the concept.

A mid-coast location, between Brunswick and Searsport, is recommended because it would provide a central location for management of the Refuge's offshore islands in this region. In addition, this location would be more accessible to the millions of seasonal visitors to Maine's coast, closer to resident Maine population centers, in proximity to major ferry and seabird-viewing tour boat ports, and closer to offices of key partner organizations such as Maine Coast Heritage Trust, National Audubon Society, and the Service's Gulf of Maine Program. Criteria for a site include, but are not limited to, the following:

- within ½ mile of coastal U.S. Route 1 between Brunswick and Searsport;
- on the waterfront, or with an unobstructed view of the water, and/or with foot access to the water;
- no changes in zoning are required, or changes would not result in a protracted conflict with the local authority;
- is consistent with the neighborhood, e.g. would have limited impact on neighbors;
- has good accessibility to utilities which do not require costly upgrades;
- has good access to emergency services;
- has minimal to no hazardous materials or contaminants;
- has safe ingress and egress, or development of such is reasonable;
- can accommodate a handicapped-accessible building(s) for Service staff, Friends Group, and partners, as well as an educational and interpretive facility, storage space for boats and maintenance equipment, and parking for cars and buses;
- can accommodate anticipated visitation with minimal adverse impact;



Decommissioned lighthouse on Matinicus Rock
USFWS photo

- is readily accessible to an outdoor environment for educational and interpretive programs;
- is already Service-owned, or a willing seller is available and property is available at fair market value or less;
- facility and site construction environmental impacts would be minimal;
- costs of developing site are reasonable; and,
- can support construction of a facility modeled on the principles of sustainable design, including such things as active and passive solar, and a state-of-the-art septic system and well.

Once there are specific sites to evaluate, a separate review and NEPA compliance document will be necessary prior to a final decision for a new facility. The criteria would be reviewed and refined during that process. We are currently exploring partnership opportunities to develop and occupy the future education center/office complex.

Staffing and Budgets

The current staff consists of six permanent employees: a Refuge Manager, a Deputy Refuge Manager, two Wildlife Biologists, a Small Watercraft Operator, and an Administrative Assistant.

Permanent staff, operations and maintenance budgets over the last six years are included in Table 3-4. Operations funding (1261) includes those funds used for such things as salaries, new purchases, contracts, and new construction. Maintenance funding (1262) is used for maintaining the existing infrastructure.

The specific maintenance funding related to the lighthouses is worthy of mention. Due to the complicated logistics of maintaining offshore island lighthouses and associated buildings, and the national historic preservation standards required for Petit Manan, Matinicus Rock, Libby and Egg Rock lighthouses or associated buildings, the costs are very high. Repairs to the towers, former keeper’s houses, sheds and other outbuildings, boat ramps, generators, and debris removal have all been part of these projects. The following costs have been incurred over the last five years:

Petit Manan Light Station:	\$742,000
Matinicus Rock Light Station:	\$250,000
Egg Rock Light:	\$350,000

Table 3-4 Refuge budgets from 1998 to 2004

Year	Permanent Staff ^A	Funding	
		1261 Funds	1262 Funds
1998	6	\$398,000	\$50,000
1999	6.6	\$519,800	\$646,700 ^B
2000	8.7	\$647,800	\$208,000 ^C
2001	8.9	\$632,500	\$29,000
2002	7.7	\$598,700	\$16,800
2003	6.4	\$504,283	\$89,958
2004	6.0	\$493,222	\$34,100

^A Decimal reflects personnel who worked less than one full year

^B Structural repairs to Matinicus Rock light station totaled \$250,000. Structural repairs to Egg Rock light station totaled \$350,000.

^C Structural repairs to historic light house keepers home on Petit Manan Island totaled \$127,000. An additional \$35,000 was utilized to purchase a new vehicle for the Refuge.

Refuge Revenue Sharing Payments to Towns

The Refuge contributes directly to the economies of several towns in coastal Maine. Since 1935, the Service has made Refuge Revenue Sharing payments to counties or towns for refuge land under its administration. Lands acquired by the Service are removed from the tax rolls; however, under provisions of the Revenue Sharing Act, as amended, the county or other local unit of government receives an annual revenue sharing payment which often equals or exceeds the amount that would have been collected from property taxes if in private ownership. Table 3-5 below portrays payments made to towns during our fiscal year 2002.

Table 3-5 Refuge Revenue Sharing Payments in Fiscal Year 2002.

Town/County	Amount of Payment
Addison	\$895.00
Boothbay	\$2,958.00
Camden	\$86.00
Cutler	\$8,505.00
Friendship	\$545.00
Gouldsboro	\$3,219.00
Jonesport	\$1,409.00
Knox County	\$2,511.00
Land Use Regulatory Com.	\$966.00
Machiasport	\$619.00
Milbridge	\$14,505.00
Phippsburg	\$292.00
South Bristol	\$350.00
Steuben	\$20,964.00
Swans Island	\$1,041.00
Tremont	\$1,047.00
Roque Bluffs	\$646.00
Vinalhaven	\$234.00
Winter Harbor	\$413.00
Total	\$61,205.00

Refuge Step-Down Plans

Over 25 step-down plans are required by the Service's Refuge Manual, although not all are relevant to every refuge. The following is a summary of the status of step-down plans relevant to this Refuge. Chapter 5 presents our schedule for completing those not in final form.

These plans are completed:

- Fire Management Plan, 2002 (includes annual prescribed burn plan update and wildfire prescriptions)
- Continuity of Operations Plan, 1999
- Safety Program and Operations Plan, 2000
- Hunt Plan, 2001 (includes annual hunt program update)
- Land Protection Plan (Appendix A, pending approval of CCP)

These plans are now in draft form or being prepared:

- Inventory and Monitoring Plan
- Habitat Management Plan

These plans need to be completed:

- Visitor Services Plan
- Law Enforcement Plan
- Invasive Species Management Plan
- Cultural Resources Management Plan

Volunteer/Friends Groups (status, activities)

We are very proud of our volunteer program. Recently we have had 25 volunteers annually contribute 2,892 hours performing administrative, public use, and biological duties. Included in these figures are research volunteers who assist with the seabird restoration on refuge islands.

We are pleased that a Friends of Maine Seabird Islands group was formed in 2002. This Friends group has established a board of directors, secured grant funding, and sponsored a very successful Seabird Symposium. The group is committed to supporting our seabird conservation work through increasing public awareness, building broad-based community support, and by advocating for additional island protection. They will utilize outreach, education and partnerships to achieve their goals.



Killdeer

Photo by Bill Buchanan

Research and Special Uses

Our review of Refuge special use permits issued between 1981 and 2004 reveals that there have been 21 different types of uses permitted. We average 12 permits per year. Most of these allow access to Refuge lands for environmental education, scientific sampling, flora and fauna research collections, and commercial tours to islands for wildlife observation. A complete listing of these permits is available from Refuge Headquarters.

Community Outreach

We are involved in community outreach in several ways. We issue periodic news releases regarding Refuge events to the local news media.

Our participation in community events is also an important part of outreach. We staff informational booths at the Sportman's Show in Orono, Lobster Festival in Rockland, and the Common Ground Fair in Unity. Our staff also give presentations about the Refuge to local civic organizations, schools and universities.

Our web site (<http://petitmanan.fws.gov/>) provides additional information about Refuge resources and management activities.

Partnerships

Our partnerships have been instrumental in accomplishing management goals and objectives. These partnerships include universities and colleges, conservation organizations, several Federal, State and local agencies, land trusts, historic preservation groups, and adjacent landowners. The partnerships have resulted in biological research, cooperative seabird restoration and management, management of other Federal trust resources, land protection, and environmental education and interpretive programs. A summary of some of our partners follows.

Maine Department of Inland Fisheries and Wildlife

Staff from this state agency (MDIFW) served on the planning team for this project. The mission of MDIFW is to ensure that all species of wildlife and aquatic resources in Maine are maintained and perpetuated for their intrinsic and ecological values, for their economic contribution, and for their recreational, scientific, and educational use by the people of Maine. With regards to the coastal environment, this agency owns, holds conservation easements, or manages through agreements with the Bureau of Public Lands, 301 islands and ledges. This includes 88 nationally significant coastal nesting islands. MDIFW works with seabird researchers on issues of management concern. In addition, they conduct recovery work for the State's other threatened and endangered species. They advise private landowners interested in wildlife and habitat protection, and administer the State's hunting, fishing and trapping programs.

The Gulf of Maine Coastal Program

Working in partnership with Federal, State, local, and non-governmental partners, the Service's Gulf of Maine Coastal Program (GOMP) helps identify, protect, and restore significant fish and wildlife habitat. Using existing natural resource data along with biological expertise and state-of-the-art computer mapping and database management capabilities, biologists identify important fish and wildlife habitat. In addition, GOMP directs outreach services and technical assistance to interested organizations, including national wildlife refuges, State agencies, statewide conservation groups, and land trusts.

Since 1994, GOMP has played a key role in protecting more than 9,600 acres of important fish and wildlife habitat, restoring 1,300 acres of coastal wetlands, reopening and restoring fish passage on 670 miles of Atlantic salmon rivers, and leveraging more than \$13 million from private, State, and Federal sources. GOMP has helped identify and protect 22 coastal islands through fee title acquisition or the use of conservation easements, and has supported seabird restoration projects on 12 islands.

Gulf of Maine Council on the Marine Environment

The Gulf of Maine Council on the Marine Environment was established in 1989 by the governments of Nova Scotia, New Brunswick, Maine, New Hampshire, and Massachusetts to foster cooperative actions within the Gulf watershed. Its mission is to maintain and enhance environmental quality in the Gulf of Maine to allow for sustained resource use by existing and future generations. The Council's Public Education and Participation Committee publishes *The Gulf of Maine Times*, which emphasizes articles to highlight or promote cooperation "to maintain and enhance environmental quality in the Gulf of Maine."

Maine Anadromous Fish Coordination Office

The Maine Anadromous Fish Coordination Office is co-located at the Craig Brook National Fish Hatchery in East Orland, Maine. Its work entails rehabilitation of imperiled Atlantic salmon stocks through stock enhancement, stock assessment, habitat evaluation, protection, and monitoring, inventory and removal of obstructions to migration, characterizing generic composition of stocks, and outreach and education related to Atlantic salmon conservation. It also works on other interjurisdictional fish species like American shad, river herring, striped bass, rainbow smelt, Atlantic and shortnose sturgeon, and their respective habitats.

Canadian Wildlife Service

The management of wildlife in Canada is a shared responsibility between Federal, provincial, and territorial governments. The Canadian Wildlife Service of Environment Canada (CWS) handles wildlife matters that are the responsibility of the Federal government. These include protection and

management of migratory birds as well as nationally significant wildlife habitat. Other responsibilities are endangered species, control of international trade in endangered species, research on wildlife issues, and international wildlife treaties and issues. CWS also consults with provinces and territories on determining migratory game bird hunting regulations. As a member of the Gulf of Maine Seabird Working Group, CWS participates in seabird management discussions and planning at annually scheduled meetings held in both the U.S. and Canada.

For the past several years, CWS biologists have coordinated with both Refuge and Regional Office staff on Machias Seal Island issues. Sovereignty aside, from Canada's standpoint, CWS is responsible for seabird management on the island. The United States' viewpoint supports the Service's responsibility for managing the same resources on the island. At the field level, both CWS and our staff work together on biological and public access issues. Canadian and U.S. biologists meet annually to discuss seabirds, tour boat issues and landing schedules.

Maine Coast Heritage Trust

The mission of Maine Coast Heritage Trust (MCHT) is to conserve coastal and other lands that define Maine's distinct landscape, protect its environment, sustain its outdoor traditions, and promote the well-being of its people. MCHT has helped landowners, communities, government agencies, and local land trusts for more than 30 years to conserve more than 112,000 acres, including vital wetlands, valuable farm and forest land, hundreds of miles of shoreline, and over 260 entire islands. It now owns only 48 properties outright, and holds conservation easements on 95 others. This organization is considered a leader in Maine coastal island conservation. On several occasions MCHT has purchased islands and held them until the Service could secure appropriate funds for the property.

Other Land Trusts

Land trusts are a variety of private, non-profit organizations that protect land for its natural, recreational, scenic, historical, educational, or productive values. The 90 land trusts in the state play an essential role in Maine's conservation community. Due to inconsistent funding of State and Federal agencies and the development interests of some landowners, conservation land trusts are often the only alternative for preserving threatened lands. Conservation easement, land donation, and fee purchase are their primary methods of land protection. There are 45 land trusts established along the coast of Maine, many of them actively working to protect coastal nesting islands.

The Nature Conservancy, Maine Chapter

The Maine Chapter of The Nature Conservancy protects plants, animals, and natural communities representing the diversity of life in Maine.

Historically, the chapter has played a lead role in protecting island habitats along the Maine coast. Since 1956, the chapter has helped protect 117 coastal islands as habitat for seabirds, waterfowl, shorebirds, eagles, and rare plant and marine communities. Twenty-two of these islands are nationally significant coastal nesting islands. The chapter, supported by over 12,000 member families, owns and manages approximately 40 mainland preserves and 50 coastal islands.

Private Island Owners

Individual landowners in Maine have owned coastal nesting islands for many generations. They have protected the islands and their biological values by conserving the islands' resources and limiting development. Unfortunately, raising tax costs may prohibit some families from retaining ownership of these undeveloped properties.

National Audubon Society

The National Audubon Society (NAS) promotes wise use of Maine's environment through research, education, and advocacy. NAS works cooperatively with the Refuge and the MDIFW on seabird management and restoration projects on several Maine islands. Its current programs include the ongoing protection of seabirds, and informational programs to support threatened and endangered seabirds and seabird habitat restoration. NAS also holds fee title and conservation easements on seven nationally significant coastal nesting islands.

Maine Audubon Society

The Maine Audubon Society promotes wise use of Maine's environment through research, education, and advocacy. Its current programs include protection and information to support threatened and endangered shorebirds, shorebird habitat restoration, loon restoration, and the "loon count." This society also offers field trips on natural history and ecology of coastal waters, and maintains a staff of wildlife biologists who support active field work, education, and a limited advocacy program. It also holds conservation easements on several coastal nesting islands.

State Planning Office–Maine Coastal Program

State Coastal Program staff work on a variety of issues relating to water quality, stewardship, and economic development, and provide technical assistance to municipalities. They work to ensure the continuation of working waterfronts and public shore access points, and support the Maine Coast Week, the Shore Stewards Partnership, and the Penobscot Bay Marine Volunteers.

Island Institute

The Island Institute is a non-profit organization that serves as a voice for the balanced future of the islands and waters of the Gulf of Maine. They are guided by an island ethic that recognizes the strength and fragility of Maine's island communities and the finite nature of the Gulf of Maine ecosystems. Along the Maine coast, the Island Institute seeks to support the islands' year-round communities; conserve Maine's island and marine biodiversity for future generations; develop model solutions that balance the needs of the coast's cultural and natural communities; provide opportunities for discussion over responsible use of finite resources, and provide information to assist competing interests in arriving at constructive solutions. The Institute also works with local non-profit, State, and Federal partners to ensure long-term protection of nesting islands.

Maine Island Trail Association

The Maine Island Trail Association's (MITA) mission is to "...establish a model of thoughtful use and volunteer stewardship for the Maine islands that will assure their conservation in a natural state while providing an exceptional recreational asset that is maintained and cared for by the people who use it." MITA encourages a philosophy of low-impact use and active stewardship among its members. It also strives to educate island visitors about natural history, and the ecological sensitivity of the islands. Member-volunteers are encouraged to participate in their island monitoring and Adopt-An-Island programs. Members receive a very popular guidebook to the Maine Islands Trail, along with their *Island Trail* newsletter, and educational information regarding low-impact camping.

Hurricane Island Outward Bound School

Hurricane Island Outward Bound School (HIOBS) is a non-profit educational institution dedicated to outdoor experiential education. It has been using Cross Island since 1969 as a base for both solo and group camping programs. On a 20 acre inholding on the northeast end of Cross Island, the school owns and maintains the former U.S. Coast Guard lifesaving station and boathouse, now known as the Cabot Biological Station. HIOBS is headquartered in Rockland, Maine.

The Chewonki Foundation

The Chewonki Foundation is a non-profit educational institution organized in 1963 to assume ownership and leadership for Camp Chewonki. The Foundation's programs encourage participants to develop their personal potential, gain a sense of community, and heighten their interest in and understanding of the natural world. We grant limited overnight camping on the Refuge's Halifax and Cross Islands for use as part of their educational programs. They are based in Wiscasset, Maine.

Wilderness Management

In 2001, our team began a wilderness review of all current Refuge lands. This review is our formal process to identify and recommend Refuge System lands and waters that merit inclusion in the National Wilderness Preservation System. Wilderness reviews are required in CCPs, and we conduct them in accordance with the refuge planning process outlined in the Service Manual (602 FW 1 and 3), including public involvement and NEPA compliance.

Appendix D presents the results of our wilderness review. In addition, objective 7.5 in chapter 4, outlines specific management direction.



Gadwall duck with duckling
USFWS photo

Cultural and Historic Resources

As is generally the case in coastal settings, the project area is especially rich in archaeological resources, though few have been reported on current Refuge lands. The majority of prehistoric archaeological sites in the area date from the Ceramic Period (ca. 1000 B.C. to A.D. 1600). This probably reflects population density to some extent, but is also a reflection of the instability of coastal environments during preceding periods. Pottery (e.g. ceramic) appears in this period, and daily life appears to have consisted of a mix of hunting and gathering of upland, estuarine, and marine resources, especially soft shell clam (*Mya arenaria*).

Unlike most of the eastern U.S., prehistoric agriculture was only significant in southwestern Maine because of the short growing season. Sites on islands were generally seasonally occupied, presumably as bases to exploit marine resources. A similar pattern of occupation followed European contact, with the important addition of fur trapping for the European market. Some places may have become regular trading locations when European ships arrived in the summer. Summer use of some islands as European cod fishing stations also began in the 17th century. Today, coastal erosion is a severe threat to many prehistoric and 17th century archaeological sites in the study area, especially on the more exposed islands.

Only six prehistoric archaeological sites are recorded within current Refuge property, none of which has been thoroughly examined by Service archaeologists. All are in severely eroded shoreline locations on islands. Most appear to be shell middens dating from ca. 2000 years ago to shortly before European contact. A human burial was reported from one of these sites in the 1950s, and stone tools and pottery have been reported from others, indicating that these sites had considerable potential to add to our knowledge of regional prehistory prior to their damage by erosion. Some may still have research potential, while others may have been completely destroyed by erosion since their discovery.

Extensive permanent settlement of the area by Euro-Americans was hindered by repeated wars with the Native Americans and their French allies until the mid-18th century. Many towns were established in the latter part of the century, with population and economic activity generally concentrated around major estuaries. Some larger islands were settled as fishing and farming communities, although most were only used seasonally for livestock pasture or as seasonal fishing station sites. Lighthouses and lifesaving stations were built by the Federal Government on several islands in the project area during the 19th century. Recreational camps, ranging from single room shacks to elegant mansions, also began to be built on some islands in the latter part of the 19th century.

Recorded historic period archaeological sites on the Refuge are generally set back from the shoreline, with the majority being mainland farm sites. One eroding island historic site has been identified, which appears to have been the foundation of a building dating to circa 1800. Place names such as Stage Island (referring to fish drying racks, or “stages”) indicate that similar sites probably exist on other islands from periods spanning European contact to the present. Most island historic sites probably relate to 18th and 19th century maritime activities or livestock raising. In sheltered areas, these may include tidal zone features, such as remains of piers or vessels. Unrecorded historic sites within the Refuge are likely to also include seasonal shore fishing stations and trading locations dating from the earliest periods of European contact and settlement. Few of these locations

have been successfully located within New England, and even fewer studied through archaeological excavation. Such sites are likely to be among the most significant historic archaeological sites in the nation, and the threat of loss by erosion makes their discovery, study, and protection increasingly urgent.

Lighthouses and Other Historic Structures

On Petit Manan Island, Refuge structures currently listed on the National Register of Historic Places include a light keepers dwelling and outbuildings built in the late 19th century for the Petit Manan Light Station. The dwelling and outbuildings are now used as a research base for the extensive seabird restoration project on the island. These buildings require regular maintenance and have received major repairs in recent years, but further repairs are still needed. Recent funding has addressed significant maintenance needs on the two story dwelling and rain shed. The boathouse was also replaced in 1994. The U.S. Coast Guard retains ownership and responsibility for maintaining the functioning light tower. The Service

cooperates with the Coast Guard on all islands with functioning lighthouses to provide access for emergency and scheduled maintenance of structures and aids to navigation.

Three of the four lighthouse islands transferred to the Service under the Maine Lights Bill of 1996 are listed on the National Register of Historic Places. It is the responsibility of the Service to maintain the structures on three of these islands to historic preservation standards: Libby Island, Matinicus Rock, and Egg Rock lighthouses. The oldest is Libby Island Light Station, with a granite tower built in 1822 and a brick fog signal building built in 1884. Both are in fairly good condition, but do need some repairs, and will require regular maintenance in the future.

Matinicus Rock Light Station, the most famous of the three, includes an 1848 granite dwelling, an 1890 boathouse, and twin granite towers built in 1858. This light station is strongly associated with Abbie Burgess, one of the most famous 19th century heroines of American lighthouse history, who lived in the lighthouse from 1853 to 1875. The north tower at Matinicus Rock is abandoned and in extremely poor



Lighthouse on Libby Island
USFWS photo

condition. With its lantern removed and no door or window glazing, rain and snow infiltration has destroyed much of the mortar in this tower. Recent repairs on the dwelling, boardwalk, boat ramp and boathouse have been completed, however all structures here will need regular maintenance. The National Audubon Society currently uses the dwelling as a seasonal research station.

Egg Rock Light Station consists of a frame dwelling with a lantern on its roof, built in 1875, and a brick fog signal building, built in 1904. The dwelling has received significant repairs in recent years including replacing the roof and windows, and applying new storm shutters. The brick fog signal building is in good condition. Regular maintenance on both buildings will be required.

Two Bush Island, the fourth lighthouse island, transferred in 1996, has a functioning light station. It now consists only of a brick tower built in 1897. It has been determined ineligible for the National Register of Historic Places, due to loss of the dwelling, boathouse, and oil house that were originally part of this station. Its maintenance is not required by the National Historic Preservation Act. A lesser level of maintenance to protect the light so that it can remain operational will be required under the Maine Lights Bill of 1996.

Franklin Island, acquired by the Service in 1973 from a Coast Guard transfer, also has a functioning light station which is owned and maintained by the Coast Guard. The lighthouse is on the National Register of Historic Places.

Pond Island, acquired by the Service in 1973 from a Coast Guard transfer, also has a functioning lighthouse which is owned and maintained by the Coast Guard. This lighthouse is on the National Register of Historic Places.

Nash Island, half of which was acquired by the Service in 1981 from a Coast Guard transfer, has a non-functioning lighthouse located on the Service-owned half of the island. The light, however, was conveyed to a nonprofit corporation under the terms of the Maine Lights Bill of 1996. The Coast Guard holds an access easement to this light. The lighthouse is on the National Register of Historic Places.

A fishing camp on Metinic Island, consisting of a wing of a 19th century house that was moved to its present location in the 1930's, has been determined ineligible for inclusion on the National Register of Historic Places. This building was renovated in 2002 and is currently used as a base camp for researchers.

The collapsing ruin of an 1880's lifesaving station on Cross Island has been determined ineligible for National Register listing due to its extreme deterioration. The facility is no longer standing.

Part 2: Refuge Island Resources

Islands Overview

There is an incredible diversity of ecological communities and associated species on the 42 Refuge Islands. The resources protected on these islands are unique to the Refuge System. In the section below, we provide general descriptions on some of the unique Federal trust resources and rare and declining species protected on the islands. This is followed by individual island descriptions and a series of maps with aerial photos of each island. The islands are presented in order from west to east. They are identified by local name and their Coastal Island Registry Number (CIREG); a unique identifier assigned by the State of Maine Planning office. It is important to note that Service island acquisition has been on-going during development of this CCP. The most current list of Refuge islands should be obtained at Refuge Headquarters.

At the end of the chapter, Table 3-42 provides a summary of cover types for the Refuge.

Threatened and Endangered Species (Federal-listed)

Roseate tern

The northeastern population of the roseate tern is Federal- and State-listed as endangered. Together with Arctic and common terns, roseate tern populations were decimated in the Gulf of Maine in the late 1800's due to a combination of shooting and egging for food and bait, and feather collection for the millinery trade (Drury 1973). Conservation legislation passed in the early 1900's provided protection from human persecution, but expanding gull populations soon caused tern numbers to again decrease significantly (Kress 1983).

By 1977, within the entire Gulf of Maine, all three tern populations had decreased to 5,321 total pairs while the number of islands supporting nesting terns had decreased by half. Cooperative efforts by members of the Gulf of Maine Seabird Working Group (GOMSWG) to attract new birds to islands and to control gull predation have reversed this decline and all three species are experiencing population growth. After 15 years of active

management, the roseate tern population in Maine has risen from a low of 76 pairs to a record high of 289 pairs in 2001. This represents a 278% increase in Maine's population. In 2002, 379 pairs of roseate terns nested at six sites in the Gulf of Maine (including Canada).

While the number of breeding pairs has increased in recent years, we continue to be concerned over the poor distribution of nesting pairs across the region. Approximately 87% of the Northeast roseate tern population breeds on three islands: Bird and Ram islands in Massachusetts and Great Gull Island in New York. In Maine, roseate terns only nest on three or four



Roseate Tern

Photo courtesy of Gil Lopez-Espina

islands, with 95% of the Maine population on Stratton and Eastern Egg Rock. Petit Manan, Pond, Metinic, and Seal islands support small numbers of nesting roseate tern. Matinicus Rock, Metinic Island, and Egg Rock have had historic nesting, and nesting attempts have been documented on Pond Island. The terns limited nesting distribution significantly increases the potential for a single catastrophic event to affect a major percentage of the population.

Our roseate tern recovery efforts on the Refuge have focused on increasing the number of nesting pairs on islands and maintaining a productivity level of 1.0 fledged chick/nesting pair. We continue to acquire islands with nesting habitat and engage in cooperative seabird restoration efforts to improve the geographic distribution for all three species of nesting terns. The Roseate Tern Recovery Plan (USFWS 1998) goal is to expand the Northeastern U.S. population to over 30 colonies, with six sites supporting at least 200 nesting pairs with high productivity (1.0 fledged chick/pair).

Habitat manipulation is often necessary to enhance or maintain nesting habitat for roseate terns. Available information indicates that these terns generally prefer dense vegetation or some level of overhead cover for nesting (USFWS 2000). This is somewhat contradictory to the more open habitat used by nesting common and Arctic terns. Fortunately, these differences in habitat preference can usually be accommodated on the same island. Interestingly, roseate terns frequently nest within established colonies of common terns (Nisbet 1981). Habitat manipulation includes construction of nest boxes, allowing dense vegetation to develop, control of laughing, herring, and great black-backed gulls, and other predators. We also restrict public access to seabird islands during the nesting season to minimize disturbance. We describe our predator management strategies and public use restrictions in the discussion on common and Arctic tern that follows.

Given the increases in nesting pairs in recent years, and the establishment of several new tern restoration projects, we are optimistic that the population will continue its current growth trend over the next 15 years, resulting in significant progress towards recovery of this species.

Bald eagle

The northern population of the bald eagle is Federal- and State-listed as threatened. Within the Refuge, bald eagles are actively nesting on four islands, and have historically nested on four additional islands. The Gouldsboro Bay Division also contains one active bald eagle nest. Preferred habitat for bald eagles nesting on Maine coastal islands is mature red spruce/ balsam fir forests close to foraging areas. When available, mature hardwood trees are also used. Eagles can be sensitive to disturbance during the nesting season, and will typically nest in areas with little human disturbance. Once disturbed, adult bald eagles may flush from their nest and leave eggs and young chicks exposed to the inclement weather (heat or cold) or susceptible to predation.

Historically, threats to bald eagles have included environmental contaminants, shooting, habitat loss, and human disturbance at nest sites. Extensive public education efforts and Federal and State legislation have significantly reduced many of these threats. The bald eagle population in Maine has responded to this protection, and the population has increased nearly 8% per year for the past 10 years. The state now supports over 290 pairs of eagles (MDIFW 2002). MDIFW has identified permanent protection of eagle nesting areas as the top priority for the future recovery of this species in Maine. In particular, they have specified a recovery objective of at least 50 nesting areas under permanent habitat protection (conservation ownership or easement), with an additional 100 nesting areas under permanent protection or cooperative agreement (MDIFW 2001).

While we monitor nest occupancy and productivity on the Refuge in cooperation with MDIFW, we do not otherwise actively manage these sites. We restrict public access at active nesting sites from February 15 to August 31. At historical nesting sites, we restrict public access from February 15 to May 15 to encourage re-nesting. If birds are not established by May 15, we determine whether or not eagle activity in the area warrants a continued closure through August 31.

Seabirds

In addition to the roseate tern restoration noted above, we are actively managing our Refuge islands for other seabirds of conservation concern. While our management is focused on common and Arctic tern, Atlantic puffin and razorbills, we are also monitoring populations of common eider, laughing gull, common murre, Leach's storm-petrel, and black guillemots.

One management practice we employ for all our seabird species is a restriction on public access to islands during the nesting season. We restrict public access to seabird nesting islands from April 1 to August 31 to minimize human disturbance during this sensitive time of year. On islands where only gulls or eiders are nesting, the closure period is April 1 to July 31 to reflect their earlier nesting seasons. Respective island closures are evaluated annually as new biological information is obtained. Seal Island is an exception to the seasonal closures; it is closed year round due to a safety concern with unexploded ordnance.

Common and Arctic tern

The Arctic tern is State-listed as a threatened species, and the common tern is State-listed as a species of concern due to their small population sizes and limited geographic distribution. Although Arctic and common terns historically nested on over 70 islands, nesting is now limited to less than 30 islands. Unfortunately, due to a combination of habitat loss through development and recreational pressures, and the presence of nesting gulls, the majority of islands used historically are no longer suitable for nesting terns. Of particular concern is the fact that over 60% of common terns and more than 90% of Arctic tern nesting in Maine occur on three Refuge islands: Petit

Manan and Seal islands, and Matinicus Rock. Machias Seal Island, which we manage under an MOU with MDIFW, supports 1,349 pairs of common terns and 2,202 pairs of Arctic terns (GOMSWG 2002). When you include the nesting population on Machias Seal Island, 94% of the Arctic terns nesting in the United States, with the exception of Alaska, nest on four Refuge islands. Our management focus has been on permanent protection of the nesting islands, predator management, vegetation management, and restricted public access. These are described in more detail below.

With regard to predator management, we are trying to provide terns with predator free nesting islands to maximize tern survival and production rates. Methods include: harassment, egg and nest destruction for gulls, trapping of owls and mammals, and shooting predatory owls, herons, and gulls. We have also used an avicide (DCR-1339) to specifically control gulls during the first two to three years of a restoration project on several islands. The use of the avicide is strictly controlled and used only when non-lethal means would not allow us to accomplish our predator control objectives.



Great horned owl

Photo courtesy of the Cornell Laboratory of Ornithology

The presence of a single predator can have disastrous effects on a nesting colony. Both herring and great black-backed gulls are highly efficient predators of tern eggs, chicks and adults. In addition, they compete with the terns for nesting sites. Their presence on a nesting island can lead to complete nesting failure or colony abandonment from an island. Mammalian predators, even a single individual, can also have a disastrous effect on a seabird colony. During the 2001 nesting season, a mink swam to Ship Island and preyed on the colony there, resulting in near complete nesting failure; only four common tern chicks were produced from over 300 nests. The effects of predation will vary depending on the type of predator, seabird species, habitat on the island, and time of year predator arrives on the island. We annually monitor the effectiveness of predator control programs and evaluate new and different techniques.

Both common and Arctic tern species tend to nest in areas providing some overhead cover and a mix of vegetation and open space (Cramp 1985, USFWS 2000). The density and height of a particular plant seem to be more significant in determining use by nesting terns than any specific species composition. We are actively managing the vegetation on several of



Common tern chick
Photo by Stacie Schoppman

the tern nesting islands to maintain a high quality nesting substrate and to improve nest productivity. We use a variety of techniques to manage rank vegetation including prescribed burning, sheep grazing, mowing and herbicides. Habitat management efforts will be expanded to the other restoration islands if vegetation conditions warrant management.

Historical information indicates that vegetation on many of the seabird nesting islands was kept short by annual burning by lighthouse keepers or grazing by livestock. In fact, sheep have grazed on Maine coastal islands for approximately 400 years, with a peak population of nearly 20,000 sheep (Fallon 1991). Indirectly, these vegetative treatments benefited nesting terns and several other seabirds.

Interestingly, because of this history, on many islands we are not certain what the native, natural vegetation would look like if burning and grazing had not occurred.

We have an active prescribed burn program, particularly on Petit Manan Island where burning has been very successful at reducing raspberries and other rank vegetation to benefit nesting terns. While burning is a valuable vegetation management tool, its use is limited due to a narrow, optimum burning window where conditions are dry and calm enough to allow access to the island with staff and equipment. Therefore, other tools and techniques are needed as well.

On Metinic Island, we are presently using sheep grazing to manage the vegetation to benefit nesting terns. The family who owns the southern 150 acres of the island maintains a flock of 120 sheep. With the exception of a few small vegetation study plots we maintain, the sheep are generally allowed to graze the entire island. Our plots include two that are permanently fenced, and two reference “unfenced” plots. Several times each season, we record the species composition and plant height in the four plots. Prior to the tern nesting season, we encircle the three acre tern restoration area with electric fence. This practice allows the vegetation to grow to greater heights than if subject to grazing, and provides nesting cover for the terns.

During 1994 and 1995 the Refuge and NAS conducted several vegetation control experiments with sheep and goat grazing on Seal Island (NAS 1994, NAS 1995). As expected, information gathered to date on both Seal and Metinic islands indicates that the sheep are altering the species composition and height of the vegetation. However, it appears that the seasonal fencing of the restoration area on Metinic Island is providing the terns with appropriate nesting cover. At the end of the nesting season, we remove the fence and the sheep may graze the entire island.

Grazing is also occurring on Nash Island. The sheep originate from the contiguous privately owned Big Nash Island and cross at low tide to Nash Island. A small number of terns (2-4 pairs) nest on Nash Island, but we are not actively managing this site. Our concern has been that we have had little, if any, control over grazing intensity or duration on either Nash or Metinic islands. However, on Metinic Island, the current grazing situation appears to provide terns with suitable nesting habitat, by reducing the rank vegetation. At this point in time, we intend to allow grazing to continue on both islands with continued monitoring. It is clear that without grazing as a vegetation management tool, we would eventually need to employ some other labor intensive and expensive method of vegetation control, similar to the other intensively managed seabird restoration islands.

We have also utilized mowing and rototilling as means of managing vegetation for nesting seabirds. On Ship Island, staff have evaluated a combination of techniques (mowing, rototilling, and landscape fabric) in an effort to create additional nesting habitat for the common terns. In 2000, we established three 20' x 20' plots for treatment and monitoring. Each treatment was replicated, for a total of six treated plots. Two plots were mowed only; two plots had the vegetation mowed and then the soil was rototilled; and, two plots had landscape fabric placed throughout the rototilled area. Substrate suitable as nesting material was placed on top of the landscape fabric. The results proved interesting. Mowing by itself proved to be ineffective. The vegetation responded vigorously to the mowing and within a few weeks reached heights which would exclude nesting by terns. Both the rototilled plots and those with landscape fabric provided suitable tern nesting habitat throughout the nesting season. Efforts were repeated the following season. We are continuing to evaluate the results; however, the presence of mink on the island has eliminated most of the nesting.

Atlantic puffin and razorbills

Atlantic puffin and razorbill are State-listed as threatened due to small population sizes (450 pairs of Atlantic puffin and 350 pairs of razorbill in the State of Maine), and limited geographic distribution (four to five islands). Three islands within the Refuge currently support nesting Atlantic puffins: Matinicus Rock, Seal, and Petit Manan islands. In fact, the first two islands support over 90% of Maine's puffin population. Razorbills also nest on four islands within the Refuge: Seal, Petit Manan, and Old Man islands, and Matinicus Rock, with the latter two islands supporting 85% of Maine's population. Machias Seal Island, which we manage under an MOU with MDIFW, supports an additional 2,800 pairs of Atlantic puffin and 543 pairs of razorbill (GOMSWG 2002). When you include the nesting population on Machias Seal Island, 98% of the Atlantic puffin nesting in the U.S. nests on four Refuge islands.

Razorbills were eliminated from Maine by the late 1800's, and had only recovered to 25 pairs by 1977 (MDIFW 1999). The population has



Atlantic puffin
USFWS photo

continued to grow, and in 2002 approximately 350 pairs of razorbill were documented in Maine. It is difficult to determine the exact population size of these burrow nesters, as many sites are inaccessible.

Much of the initial recovery observed in the Maine Atlantic puffin population was due to the extensive efforts of National Audubon Society. Prior to the mid 1970's Atlantic puffin were known only to breed in limited numbers on Matinicus Rock. Between 1973 and 1986, the National Audubon Society translocated 954 puffin chicks from Newfoundland to Eastern Egg Rock, and between 1984-1989, an additional 791 puffin chicks were brought to Seal Island. The translocation effort significantly increased the Gulf of Maine population of puffin in a relatively short period of time.

Habitat for both Atlantic puffins and razorbills appears to be limited on Petit Manan Island. In 1991, 17 artificial burrows of various style were constructed on the island. During that first year, three of the 17 artificial burrows were used by the birds (Lor 1991). Although some of the structures were removed because they did not provide suitable nesting habitat, several of the other structures continue to be used today. A few newly designed structures were placed on the island in 2001, and initial

response by the nesting puffins appears promising. Puffins successfully raised chicks in three of the six artificial burrows in 2002. On Petit Manan Island, the number of puffins and razorbills observed on a daily basis and throughout the season have continued to increase over the 15 years. In 2002, the research crew routinely counted over 80 puffins and had a high count of 180 puffins and 43 razorbills. In recent years the number of puffins nesting on the island has varied between 15-24 and no razorbills nest on the island (Jamieson 2002).

As with common and Arctic tern, these species benefit from our predator management program and the restricted public access during the nesting season.

Waterfowl

Numerous species of waterfowl utilize the Gulf of Maine as migration and wintering habitat. Midwinter waterfowl surveys are conducted annually to determine the distribution and number of birds utilizing the coast. The most abundant species recorded during these inventories is the common eider,

but significant numbers of black ducks, bufflehead, common merganser, and long-tailed ducks are also observed. Surf, common, and white-winged scoters also winter along the coast of Maine. Harlequin ducks travel south from their breeding grounds in Canada to Maine to spend the winters along the remote rocky shores found along the coast. The Maine population of harlequin ducks is estimated at 1,500 individuals, and half of that population winters on a limited number of islands along the coast of Maine (MDIFW 2002). MDIFW has listed the harlequin duck as a threatened species.

Despite providing extensive habitat for migrating and wintering waterfowl, only the common eider nests in large numbers on the coastal islands. Current information indicates that 29,000 pairs of common eiders nest on 320 islands in Maine (MDIFW 2001). Eiders have a long history of exploitation throughout their range, and the number of eiders harvested annually in Maine surpasses the harvest of all other sea ducks combined (MDIFW 2001). Historically, they were subjected to the same collection and habitat loss pressures as the terns. Great black-backed gull predation continues to be a major source of duckling mortality (MDIFW 1999).

As with the other seabird species, common eider benefit from our predator management programs, and the restricted public access on seabird nesting islands during the nesting season.

Other Resident Wildlife

With our past survey efforts focusing on bald eagles, colonial nesting seabirds, wading birds, and waterfowl, our information on other wildlife resident to coastal islands is limited. Records indicate that several of the larger forested islands (e.g. Cross and Bois Bubert islands) support or have supported white-tailed deer, moose, black bear, coyote, fox, raccoon, mink, and otter. We will gain new information from our recently initiated small mammal surveys, conducted in conjunction with our botanical inventories. In addition, in 2001 spider, dragonfly and damselfly annual surveys began on several islands and the mainland divisions. We will continue to opportunistically monitor small mammals, invertebrates, and amphibians during other scheduled inventories. However, information gathered to date indicates that abundance and diversity of resident wildlife on offshore islands is lower than the mainland due to harsh winter conditions, lack of food and freshwater resources, or distance from the mainland.

Many of the Refuge islands and surrounding ledges function as haul-out sites for both harbor and gray seals. The seals come ashore, frequently during low tide, to bask, sleep, and nurse pups (Katona et. al. 1993). Their activities are generally limited to the inter-tidal areas on islands not currently managed as restoration sites, or on islands large enough to provide the seals sufficient distance from research crews. Several islands within the Refuge are used as harbor seal pupping areas in May or early June. Gray seals have their pups in January and February and have left the islands long before refuge management activities, such as seabird research and restoration projects, occur for the

season. Recent surveys have indicated that Seal Island is currently the largest gray seal pupping area in the state (Gilbert, Univ. of Maine, pers. comm.).

Island Vegetation

Rare Plants

Plants (and animals) living in the Gulf of Maine are uniquely adapted to cold water currents, the prevalence of fog in summer, and strong cold winds that typically occur off the Maine coast (Conkling 1999). Along the outer islands, this results in harsh environmental conditions similar to those in more Arctic regions. These conditions, which frequently are too harsh for some plants found on the mainland, may give rise to a group of boreal species of plants that typically exist much farther north (Mittelhauser and Morrison 2000).

To date, botanical surveys have been conducted on Cross, Halifax, Eastern Brothers, Libby, John's, Upper Flag, and Petit Manan islands. Other Refuge islands have had limited botanical inventories conducted, including Outer Double Head Shot, Inner Double Head Shot, Old Man, Seal, and Matinicus Rock islands. On the remaining islands, we have been recording unique plants or plant communities in the course of doing other refuge management activities. Rare plant species listed by The Nature Conservancy or the State of Maine and found on the Refuge are listed in Table 3-6. In addition, plants or plant communities of note are mentioned in the individual island descriptions.

Invasive and Non-Native Plants

Invasive plants have become increasingly pervasive in the State of Maine, although their abundance and distribution on the Refuge have not been thoroughly researched. The threats associated with invasive species vary significantly among the different species and their preferred habitats. Initial botanical inventories on Refuge islands suggest that non-native species such as timothy, salt spray rose, and raspberry may be common on many of the coastal islands. We currently do not know the significance of these species to the native flora of the coastal islands. However, the aggressive and resilient nature of invasive species such as purple loosestrife requires frequent and thorough treatments. The method of treatment depends on the species targeted, but mechanical, chemical, and biological control treatments have been utilized by a variety of agencies.

Individual Island Descriptions

In the following discussion, we describe what we know about each of the 42 Refuge islands; its acquisition history, its natural resources, and our management of public use and access. It is important to keep in mind that the biological information is very dynamic, in particular, nesting status, which has implications for management. The island acreage given could be either the actual survey acres or, in the event we did not survey the island, it is the deed acres or military transfer agreement acres. However, our estimate of acres in specific cover types (Table 3-42, at the end of the chapter) was

Table 3-6 Rare plants documented on Maine Coastal Islands National Wildlife Refuge

Island	Common Name	Scientific Name	State Listing	State / Global Rarity Rank ¹
Cross	livid sedge	<i>Carex livida</i>	threatened	S2 / G5T5
	coast blite goosefoot	<i>Chenopodium rubrum</i>	threatened	S1 / G5
Libby	salt marsh sedge	<i>Carex recta</i>	endangered	S1 / G4
	bird's eye primrose	<i>Primula laurentiana</i>	special concern	S2 / G5
	northern yarrow	<i>Achillea millefolium</i>	special concern	S1 / G5
Eastern Brothers	northern yarrow	<i>Achillea millefolium</i>	special concern	S1 / G5
	marsh felwort	<i>Lomatogonium rotatum</i>	threatened	S2 / G5
	bird's- eye primrose	<i>Primula laurentia</i>	special concern	S2 / G5
	Blinks	<i>Montia fontana</i>	special concern	S2 / G5
Halifax	northern yarrow	<i>Achillea millefolium</i>	special concern	S1 / G5
Bois Bubert	Nova Scotia false-foxtail	<i>Agalinis neoscotica</i>	threatened	S1 / G2?
	bird's- eye primrose	<i>Primula laurentia</i>	special concern	S2 / G5
Petit Manan	Blinks	<i>Montia fontana</i>	special concern	S2 / G5
	white adder's mouth	<i>Malaxis monophyllos</i>	endangered	S1 / G4
John's	sea-beach sedge	<i>Carex silicea</i>	special concern	S3 / G5
Upper Flag	pitseed goosefoot	<i>Chenopodium berlandier varmacrocalycium</i>	special concern	S1? / G5T?

¹ The definitions for State and Global ranking are as follows:

State Ranking: (determined by Maine Natural Areas Program)

S1: Critically imperiled in Maine because of extreme rarity or vulnerability to extirpation

S2: Imperiled in Maine because of rarity (6 - 20 occurrences) or because of other factors making it vulnerable to further decline

S3: Rare in Maine (20 - 100 occurrences)

SH: Occurred historically in Maine

Special concern: Rare in Maine based on available information, but not sufficiently rare to be considered threatened or endangered

Global Ranking: (determined by The Nature Conservancy)

G2?: Globally imperiled because of rarity (6 -20 occurrences) or because of other factors making it vulnerable to further decline (uncertain)

G4: Apparently secure globally, but with cause for long-term concern.

G5: Demonstrably widespread, abundant, and secure globally

T: Indicates subspecies rank

A: Indicates questionable rank

determined from aerial photos using a GIS mapping tool. Contact the Refuge Headquarters to verify the source for a particular island and to obtain updated biological and management information. The islands are listed in geographic order from west to east. In each island's description, we also list the Coastal Island Registry (CIREG) number, as well as identify which map at the end of the chapter contains the aerial photo for the island (Refer to Maps 3-1 to 3-25 at end of Part 2).

We also list the surveys and studies that have been conducted on each island, some of which are ongoing. Reports on some studies are available from Refuge Headquarters upon request; however, not all data has been analyzed. On several of the islands, we have very little information to share because they are logistically difficult to visit or because other island surveys have taken precedent with available funding and staff. However, a few studies and reports have applicability across several Refuge islands and are recommended reading, including:

- *The Birds and Plants of Petit Manan NWR* (Widrig 1996);
- An evaluation of livestock grazing and habitat restoration on tern nesting islands (Williamson & Schubel 1995); and
- Annual reports for each of the six seabird restoration island projects

The MDIFW has designated many of the Refuge islands as Significant Wildlife Habitat under the State's Natural Resource Protection Act (NRPA). Any seabird nesting island, located within an organized township, that provides suitable habitat and supports 25 or more nests or seabirds would meet the criteria. The majority of Refuge islands qualify as Significant Wildlife Habitat under NRPA. MDIFW has also designated Essential Habitat for bald eagles and roseate terns. Eight bald eagle nests, and six roseate tern nesting islands, located within the Refuge have been designated as Essential Habitat for these species. Both Significant Wildlife and Essential Habitat designations provide MDIFW with additional management oversight and permit authority over actions proposed for these locations to ensure habitats are not degraded due to human activities.

1) Malaga Island (CIREG 81-193; Map 3-1)

This 2.5 acre island lies in the Town of Kittery, York County. The Service purchased a conservation easement in 2002 to permanently protect the island from development.

The island is non-forested with grasses and low shrubs. No botanical or biological surveys are known to us.

2) Smuttynose Island (CIREG 81-182; Map 3-1)

This 39.9 acre island lies in the Town of Kittery, York County, in the Isle of Shoals. The Service purchased a conservation easement in 2002 to

permanently protect from development an active seabird nesting colony on the southern end of the island. A 1995 survey of nesting seabirds recorded 15 eider nests, 1,030 great black-backed gull nests, 387 herring gull nests, and three black guillemot nests. Seabird inventory results are summarized in Table 3-7.

Its habitat consists of 20 acres of shrub lands, and 20 acres of grass, forbs, and shrubs. The shoreline is very rocky. Twenty-four acres of intertidal marine wetlands were also acquired. There are two small structures on its western shore, but their maintenance is not the responsibility of the Service. Public visitation occurs on the island, as tours are conducted by the Starr Island Corporation, located on the adjacent Appledore Island. Seasonal caretakers reside on the northern end of the island.

The seabird nesting area is closed to public access during the seabird nesting season: April 1-August 31. Informational signs alerting visitors to the closure are planned.

Table 3-7 Nesting seabird species, number of pairs, (and year) observed on Smuttynose Island

Species	Number of pairs* (and year) observed
black guillemot	3('76), 3('95)
great black-backed gull	931 adults ('76), 912 ('84), 1030 ('95)
herring gull	1651 adults ('76), 1442 ('84), 387 ('95)
common eider	15 adults ('95)

* Some years, individual adults were counted instead of pairs.

3) Upper Flag Island (CIREG 55-415; Map 3-2)

This 30-acre island, located in the Town of Harpswell, Cumberland County, was acquired in fee in 1998. In 2001, a botanical inventory of the island was conducted (Mittelhauser and Morrison 2001). The island is generally flat on the north side with tall cliffs (up to 10 meters) on the southern and western shorelines. The vegetation is composed primarily of dense, low, woody shrubs with scattered patches of trees and low vegetation. The shrub community is dominated by bayberry, winterberry, chokeberry, and choke-cherry. A variety of grasses, including common hairgrass and Rhode Island bentgrass, are common. The island also contains a small sandy beach and a freshwater wetland on the northern end. Pitseed goosefoot, a state species of species concern, was documented during the 2001 botanical inventory of the island.

Table 3-8 presents the results of nesting seabird surveys. In addition to seabirds, its habitats are used by migrating and nesting songbirds, as well as raptor species, including northern harriers. Recent waterbird surveys have been conducted in conjunction with the Service's Gulf of Maine Project and Harpswell Land Trust.

The island is closed to public access during the seabird nesting season: April 1 to July 31. Information signs alerting visitors to the closure are planned.

This island has been used by recreational beach-goers. Community outreach is planned to raise awareness of seabird nesting activities and of the need for a seasonal closure.

The island is open to waterfowl hunting under State and Refuge regulations.

Table 3-8 Nesting seabird species, number of pairs, (and year) observed on Upper Flag Island

Species	Number of pairs (and year) observed
common eider	100 ('76), 350 ('80), 500 ('82), 300 ('84), 25 ('93)
great black-backed gull	10 ('77), 40 ('82), 10 ('84), 0 ('96)
herring gulls	135 ('76), 75 ('77), 80 ('80), 200 ('82), 25 ('84), 0 ('96)

* Some years individual adults were counted instead of pairs.

4) Ram Island (CIREG 55-605; Map 3-3)

This 10 acre island is located in Harpswell, Cumberland County. It was acquired in fee simple from the private landowner in 1999. The island is unforested and vegetated predominately with grasses and shrubs. Seabird inventories have been conducted and are summarized in Table 3-9.

The island is closed to public access during the seabird nesting season: April 1- July 31. Informational signs alerting visitors to the closure are planned.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-9 Nesting seabird species, number of pairs, (and year) observed on Ram Island

Species	Number of pairs* (and year) observed
common eider	75 ('76), 60 ('80), 117 ('98)
black-crowned night heron	25 ('89)
herring gull	200 ('76); 70 ('80), 295 ('95), 181 ('98)
great black-backed gull	20 ('76), 10 ('80), 25 ('95), 10 ('98)
common tern	67 ('91), 53 ('92), 0 ('95)
double-crested cormorant	124 ('98)

* Some years individual adults were counted instead of pairs.

5) Pond Island (CIREG 73-282; Map 3-4)

This 10-acre island is located at the mouth of the Kennebec River, in the Town of Phippsburg, Sagadahoc County. The island was acquired in 1973 by transfer from the U.S. Coast Guard, who maintain a lighthouse and fog signal on the island.

The vegetation is dominated by a variety of mixed grasses. The eastern and northern sides of the island feature steep rock outcroppings, while a small sand beach is also located on the northern end of the island.



Pond Island Lighthouse
USFWS photo

Until 1937, Pond Island supported a common tern colony but similar to many other tern colonies, gulls eventually excluded terns from the island. At one point in time, the adjacent North Sugarloaf Island supported the largest roseate tern colony in Maine. In an effort to restore terns to this historic nesting area, the Service and National Audubon Society initiated a tern restoration project in 1996. In 1999, Pond Island produced its first tern chick in more than 60 years, when 10 pairs of common tern successfully nested on the island. The Pond Island colony has continued to grow and in 2002, the island supported 109 pairs of common tern nested on the island.

Common eider and Leach’s storm-petrels also nest on the island. Unfortunately, great-horned owl and mammal predation continue to be a management concern on the island. Table 3-10 presents the nesting seabirds known on the island.

The island is managed in cooperation with National Audubon Society, and biological technicians staff the island during the nesting season. The society also maintains positive working relationships with several neighbors and organizations in the area. The beach on Pond Island could potentially provide limited habitat for least terns and piping plovers. The island is also an important staging area for common and roseate terns in August.

Table 3-10 Nesting seabird species, number of pairs, (and year) observed on Pond Island

Species	Number of pairs (and year) observed
common eider	50 ('76), 75 ('82), 125 ('92), 40 ('98)
herring gull	225 ('76), 225 ('82), 250 ('92), 186 ('95), 0 ('02)
great black-backed gull	100 ('76), 25 ('82), 100 ('92), 79 ('95), 0 ('02)
common tern	0 ('96), 5 ('97), 33 ('00), 135 ('01), 109 ('02)

* Some years individual adults were counted instead of pairs.

The island is closed to public access during the seabird nesting season: April 1 to August 31. Informational signs are in place to alert visitors to the closure period.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

Pond Island is located next to a popular beach (Popham Beach) that supports high public use in the summer. Personal watercraft use adjacent to Pond Island may become an issue in the future.

6) Lower Mark Island (CIREG 65-461; Map 3-5)

This 9.5-acre island lies in the Town of Southport, Lincoln County. In 1998, the Service purchased a conservation easement from the Boothbay Region Land Trust to permanently protect from development an active great blue heron rookery. The island’s topography is flat to gently rolling, a large stand of dead spruce trees remains and only 30% of the island is vegetated (mixed grasses and forbs). The shoreline of the island is dominated by ledge. Table 3-11 presents the results of nesting seabird surveys.

Table 3-11 Nesting seabird species, number of pairs, (and year) observed on Lower Mark Island

Species	Number of pairs (and year) observed
double-crested cormorant	189 ('94)
great blue heron	10 ('94); 15 ('95)

* Some years individual adults were counted instead of pairs.

The island is closed to public access during the seabird nesting season: April 1 - July 31.

7) Outer Heron Island (CIREG 65-279; Map 3-6)

This 66-acre island is located in the Town of Boothbay, Lincoln County, and was acquired in fee in 1999. Outer Heron is one of the larger forested, undeveloped islands in the region. The island is predominately red spruce with mixed hardwoods, and has a rocky coastline. Extensive felling of trees has created a variety of openings within the canopy. Dense raspberry thickets have developed in these openings.



Outer Heron Island
USFWS photo

Bald eagles were first observed breeding on Outer Heron in 1999. The pair remains active, and has produced at least one eaglet for the past four years. When available, eagles will readily prey on great blue heron adults and young, and the presence of the eagles is believed to have resulted in the abandonment of the island’s great blue heron rookery. Table 3-12 presents the results of nesting seabird surveys.

The island is closed to public access during the eagle and seabird nesting season: February 15 to August 31. Information signs alerting visitors to this closure are planned.

The island is open to migratory waterfowl hunting under State and Refuge regulations. Traditional uses on the island have included camping and picnicking.

Table 3-12 Nesting seabirds species, number of pairs, (and year) observed on Outer Heron Island

Species	Number of pairs (and year) observed
common eider	35 ('77)
great black-backed gull	5 ('77), 10 ('95)
herring gull	10 ('77), 0 ('95)
great blue heron	75 ('77), 75 ('82), 125 ('83), 80 ('92), 10 ('95), 0 ('02)

* Some years individual adults were counted instead of pairs.

8) Outer White Island (CIREG 65-278; Map 3-6)



Outer White Island
USFWS photo

This 16-acre island is located in the Town of Boothbay, Lincoln County. The Service acquired the island in fee in May 1995 from the Boothbay Region Land Trust. The island is treeless, with high cliffs and grassy upland.

The Town of Boothbay has designated Outer White Island as a Resource Protection Area, and the Maine State Planning Office has listed it as a Critical Area because of its importance as an eider nesting area. The Service has a partnership with the Damariscotta River Association and the Boothbay Region Land Trust to monitor seabird and other migratory bird use of the island, as well as public use.

An aerial survey completed in June 2002 recorded 191 harbor seals, including 22 seal pups, on the island (Gilbert, Univ. of Maine, pers. com.). Table 3-13 presents the nesting seabirds documented nesting on the island. It is also reported to be an important spring and fall stopover for a variety of migratory birds.

This island is closed to public access during the seabird nesting season: April 1 to August 31.

Table 3-13 Nesting seabird species, number of pairs, (and year) observed on Outer White Island

Species	Number of pairs* (and year) observed
common eider	150 ('77), 50 ('95)
black-crowned night heron	6 ('95)
black guillemot	3 ('76), 15 adults ('95)
herring gull	80 ('77), 169 ('96)
great black-backed gull	80 ('77), 65 ('96)
double-crested cormorant	25 ('95)

* Some years individual adults were counted instead of pairs.

9) Inner White Island (CIREG 65-276; Map 3-6)

This 5-acre island lies in the Town of Boothbay, Lincoln County. The Service purchased a conservation easement in 1998 from the Boothbay Region Land Trust to permanently protect the seabird colony from development. The island is sparsely vegetated with grass and forbs, with the majority of the island dominated by bedrock outcropping. Table 3-14 presents the nesting seabirds known on the island.

Table 3-14 Nesting seabird species, number of pairs, (and year) observed on Inner White Island

Species	Number of pairs (and year) observed
common eider	50 ('77)
herring gull	25 ('77), 78 ('95)
great black-backed gull	90 ('77), 208 ('84), 177 ('95)
double-crested cormorant	80 ('76), 373 ('77), 558 ('82), 925 ('84), 94 ('94)
black guillemot	2 ('76), 1 ('82), 5 adults ('95)

* Some years individual adults were counted instead of pairs.

The island is closed to public access during the seabird nesting season: April 1 - August 31.

10) Little Thrumcap Island (CIREG 65-267; Map 3-7)

This 8.5-acre island in the Town of South Bristol, Lincoln County, was acquired in fee in July 1995 from the Damariscotta River Association (DRA). The treeless island is dominated by mixed grasses and forbs, with some small stands of shrubs. A small beach is located on the north side of the island.

Historically the island supported a tern colony, including endangered roseate terns. We have a partnership with DRA and the Boothbay Region Land Trust to monitor seabird and other migratory bird use of the island, as well as public use. Biological interns spent two years monitoring seabirds and public use on the island. Recent surveys indicate that the island no longer supports nesting by terns or laughing gulls, and there is only limited nesting by common eiders. We continue to be concerned about the impact of predatory mink and owls on the island. Table 3-15 presents the nesting seabirds known on the island.

DRA developed a “seabird island” outdoor classroom curriculum for use on this island.

Public access is allowed year-round on part of this island. Approximately 40% of the island is closed to public access during the seabird nesting season: April 1 to August 31. Informational signs alerting visitors to the closure are in place.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-15 Nesting seabird species, number of pairs, (and year) observed on Little Thrumcap Island

Species	Number of pairs* (and year) observed
roseate tern	5 ('82), 4 adults ('84), 0 ('95), 0 ('97)
common tern	175 ('82), 200 adults ('84), 0 ('95), 0 ('98)
Arctic tern	30 adults ('84), 0 ('95)
laughing gull	75 ('82), 0 ('95)
herring gull	10 ('82), 0 ('95)
common eider	5 ('76), 1 ('98)

* Some years individual adults were counted instead of pairs.

11) Crane Island (CIREG 63-705; Map 3-8)

This 11.8-acre island is located in the Town of Friendship, Knox County. The Service purchased a conservation easement in 2001 to permanently protect an active seabird nesting area from development. The island's habitat includes a mixture of grasses, forbs, and shrubs on seven acres, and dispersed spruce forest on five acres. The island supports a diversity of seabirds as noted in Table 3-16.

The island owner retains a cabin on the northern end of the island.

The island is closed to public access during the seabird nesting season: April 1 to July 31. Informational signs alerting visitors to the closure is planned.

Table 3-16 Nesting seabird species, number of pairs, (and year) observed on Crane Island

Species	Number of pairs (and year) observed
common eider	200 ('76), 150 ('77), 300 ('83)
great black-backed gull	35 ('76), 4 ('95)
herring gull	35 ('76), 12 ('83), 0 ('95)

* Some years individual adults were counted instead of pairs.

12) Franklin Island (CIREG 63-707; Map 3-8)

This 12-acre island is located in the Town of Friendship, Knox County. The island was acquired in 1973 by transfer from the U.S. Coast Guard, and represents the first island acquired by the Service for the Refuge. Ownership of the lighthouse has been retained by the Coast Guard.

Covered with eight acres of spruce trees and four acres of grasses and raspberry thickets, the island once supported one of the largest common eider colonies in Maine. Unfortunately the eider colony was decimated by avian cholera in the mid 1980's. Osprey, herring, great black-backed gulls, black-crowned night herons, black guillemot, and a small population of eiders continue to nest on the island. Table 3-17 identifies seabird species and our observations. Leach's storm-petrel are also nesting on the island,

but because of their nocturnal nature, we do not have an accurate count on this island.

Franklin Island is closed to public use during the seabird nesting season: April 1 to August 31. Informational signs alerting people to the closure are in place. Approximately 500 people visit the island each year.

The island is open to waterfowl hunting under State and Refuge regulations.

Table 3-17 Nesting seabird species, number of pairs, (and year) observed on Franklin Island

Species	Number of pairs* (and year) observed
common eider	1300 ('76), 1300 ('83)
great black-backed gull	45 ('76), 55 ('96)
herring gulls	12 ('76), 100 ('83), 36 ('96)
black-crowned night heron	50 ('83), 4 ('96)
great blue heron	1 ('81), 0 ('94)
black guillemot	2 ('76), 21 ('77), 19 adults ('95)

* Some years individual adults were counted instead of pairs.

13) Metinic Island (CIREG 63-584; Map 3-9)

This 300-acre island is located seven miles offshore, in the Town of Matinicus Isle Plantation, Knox County. The Service owns approximately 149 acres on the north end of the island, acquired in parcels between May 1994 and August 1996. Private landowners currently own about 120 sheep that graze the entire island.

Approximately 119 acres of Service-owned property is dominated by various grass and forb species and shrubs. The most common species are chickweed, sheep sorrel, raspberry, and bay-berry. Fencing placed around vegetation plots indicates that grazing is significantly altering the species composition and height of the vegetation on the island. For example, Kentucky bluegrass, redtop, and sweet vernal grass are common in fenced areas, while these species are uncommon in grazed areas. Another 30 acres of Service-owned land in the center of the island is dominated by red spruce and balsam fir. A bald eagle pair established a nest here in 2004.

Several hundred pairs of terns, including a small number of roseate terns, nested on Metinic Island in the 1980's. The decline of the Metinic colony coincided with the initiation of



Sheep grazing on Metinic Island
USFWS photo

predator control efforts on Seal Island. We believe the Metinic Island birds moved over to take advantage of the gull-free island. Arctic and common terns have continued to nest on the south end of the island on private land; however, due to the presence of nesting gulls, the colony produces very few chicks. The Service initiated a tern restoration project on the north end of the island in 1998. Decades of sheep grazing had significantly reduced the vegetation, limiting available nesting habitat for the terns. A five-acre “peninsula” was fenced to allow the vegetation to recover and provide some shelter for the terns. Gull harassment and nest removal are utilized on the northern peninsula of the island in an effort to minimize predation on the terns.

Although terns landed among the decoys and sound system, no nesting occurred within the fenced area during the first year of the social attraction efforts. However, in 1999, one pair of common terns and two pairs of Arctic terns nested adjacent to the decoy area. Later in the season, an additional nine pairs of terns nested near the decoy area. The colony has continued to grow and in 2002, 139 pairs of common tern and 112 pairs of Arctic tern nested on the north end of the island. In addition, 15 pairs of terns nested on private land on the southern end of the island. Unfortunately, we believe gull predation continues to significantly limit the productivity of the birds nesting at the southern end of the island. Black guillemot, common eider, herring gull, great black-backed gull nest on Metinic Island. Leach’s storm-petrel also nests on the island, but because of their nocturnal nature, we do not have an accurate count on this island. Table 3-18 presents nesting seabirds known on the island.

Biological technicians are hired seasonally to work on the tern restoration program. The interns census terns, control predators, conduct food habit and productivity studies, and monitor vegetation response to grazing.

The refuge portion of Metinic Island is closed to public use during the seabird and bald eagle nesting seasons: February 15 - August 31. Informational signs alerting visitors to this closure are in place.

Table 3-18 Nesting seabird species, number of pairs, (and year) observed on the northern end of Metinic Island

Species	Number of pairs (and year) observed
common tern	180 ('84), 3 ('96), 32 ('01), 139 ('02)
Arctic tern	220 ('84), 25 ('91), 39 ('94), 29 ('96), 79 ('01), 112 ('02)
common eider	1000 entire island ('89), 246 northern end ('01)
herring gull	322 entire island ('95), 220 northern end ('01)
great black-backed gull	117 entire island ('95), 59 northern end ('01)
black guillemot	300 adults ('83), 363 adults ('95), 31 northern end ('01)

* Some years individual adults were counted instead of pairs.

14) Two Bush Island (CIREG 63-653; Map 3-10)

This 8-acre island is located in the Town of St. George, Knox County, and was transferred to the Service in 1999, under the Maine Lights Bill of 1996. The island is treeless and densely vegetated with grasses and forbs such as timothy, yarrow, nightshade, bayberry, rugosa rose, Scotch lovage, and buttercup. The Service is responsible for the light house structure, however the Coast Guard continues to maintain the navigational aids.

Historically, Two Bush Island supported nesting of common, Arctic, and roseate terns. The Refuge considered the island as a potential restoration project, until the higher priority Metinic Island was acquired. As indicated in Table 3-19, a variety of seabird species nest on the island, however, no terns currently nest here.

The island is closed to public use and access during the seabird nesting season: April 1 to July 31. The island is open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-19 Nesting seabird species, number of pairs, (and year) observed on Two Bush Island

Species	Number of pairs (and year) observed
common eider	25 ('76), 75 ('83), 66 ('92), 14 ('96), 93 ('01)
double-crested cormorant	27 ('92), 15 ('95), 0 ('96)
great black-backed gull	27 ('92), 11 ('96), 14 ('01)
herring gull	10 ('83), 154 ('92), 83 ('96), 111 ('01)

* Some years individual adults were counted instead of pairs.

15) Matinicus Rock (CIREG 63-940; Map 3-11)

This 28-acre island lies in outer Penobscot Bay, in the Town of Matinicus Isle Plantation. The Refuge acquired the island in 1999, under the Maine Lights Bill of 1996. The island is dominated with granite out-croppings interspersed with vegetation. Dominant vegetation includes witch grass, timothy, angelica, aster, red fescue, and chickweed. The east side of the island is steep and rocky with large boulders that plunge into the sea. The west side of the island tapers off gradually and contains a gravel beach. Its habitats include approximately 10 acres of grassland and 18 acres of rock ledge. The Service is responsible for the light house structures, however the Coast Guard continues to maintain the navigational aids.

Matinicus Rock was the only Atlantic puffin colony (two pairs) within Maine to have survived the market hunting that decimated most seabird colonies in the late 1800's and early 1900's. Since 1900, the island has been a principal breeding site for Arctic terns on the Maine coast. It continues to be a highly diverse and productive seabird colony. Common and Arctic tern, laughing gulls, Leach's storm-petrels, common eiders, Atlantic

puffins, razorbills, and black guillemots nest on Matinicus Rock. Terns numbers had declined in the 1990's, presumably due to the rapid growth of the nearby Seal Island tern colony. However, in recent years the colony has increased to 1,200 pairs of terns. Matinicus Rock remains home to the largest Atlantic puffin and razorbill colony in Maine.

The laughing gull population continues to increase, and now supports 624 pairs. The most recent alcid survey found over 300 puffin burrows, and 168 razorbill burrows. The island is predominantly an Arctic tern colony (999 pairs), but also supports 198 pairs of common terns. Small numbers of roseate terns have nested on the island, but not in recent years. Common murre continue to visit the social attraction area, but have yet to nest on the island. Table 3-20 presents the nesting seabirds known on the island.

We manage the island in cooperation with National Audubon Society. Biological technicians staff the island, conduct biological surveys (food and productivity studies), annually census the island, control predators, and band terns. We are participating in Arctic tern and Atlantic puffin research projects in cooperation with the University of New Brunswick. Annual survey and study results are available upon request from Refuge Headquarters.

The island also supports a wide variety of migrating songbirds, shorebirds and raptors, and island researchers continue to document the use of the island by these species.

The island is closed to public access during the seabird nesting season: April 1 to August 31. Information signs alerting visitors to this closure are in place. The island is open to waterfowl hunting under State and Refuge regulations.

Table 3-20 Nesting seabird species, number of pairs, (and year) observed on Matinicus Rock

Species	Number of pairs (and year) observed
Arctic tern	600 ('76), 651 ('84), 1252 ('90), 990 ('95), 1030 ('00), 999 ('02)
common tern	50 ('84), 25 ('90), 247 ('95), 176 ('00), 198 ('02)
black guillemot	175 ('76), 108 ('95)
Atlantic puffin	75 ('76), 75 ('83), 300+ ('01)
razorbill	12 ('76), 20 ('83), 15 ('91), 47 ('95), 168 ('01)
laughing gull	30 ('76), 114 ('84), 203 ('90), 285 ('95), 355 ('00), 624 ('02)
common eider	30 ('76), 231 ('92), 28 ('94)
herring gull	115 ('76), 4 ('94), 0 ('96)
great black-backed gull	31 ('76), 2 ('94), 0 ('96)
Leach's storm-petrel	550 ('76), 706 ('94)

* Some years individual adults were counted instead of pairs.

16) Seal Island (CIREG 63-923; Map 3-12)

This 65-acre island is located in Vinalhaven, Knox County. The U.S. Navy transferred Seal Island to the Service in 1972. The island was used as a bombing target for the Navy from the 1940's to the early 1960's.

The habitat on Seal Island consists of 35 acres of grasslands and 30 acres of rock ledge. This combination of habitats offers prime seabird nesting sites, with boulder fields and ledges for Atlantic puffins, razorbills, and black guillemots, grass and ledge areas for terns, raspberry thickets for eiders, and soft peat and glacial till soils for Leach's storm-petrels. A vegetation study was conducted in 1985 by Rappaport and Wesley.

Seal Island was once home to the largest Atlantic puffin colony in the Gulf of Maine. For over 200 years it was also a summer campsite for fisherman harvesting herring, groundfish, and lobster. The fishermen also used their nets to harvest the nesting seabirds, which led to the demise of the colony by 1887. The island was eventually recolonized by cormorants, gulls, and terns. However, by 1953 the growing gull population had completely displaced all nesting terns.

In 1984, the National Audubon Society, Canadian Wildlife Service and the Refuge began a seabird restoration project on the island. In an effort to re-establish Seal Island as an Atlantic puffin breeding colony, NAS translocated puffin chicks from Newfoundland between 1984-1989. The effort proved highly successful, and for the first time in nearly 100 years, puffins successfully bred on Seal Island in 1992. The puffin colony has continued to grow and in 2002 the island supported 181 pairs of puffins and one pair of razorbills.

Only four other islands support nesting razorbills in the state, so we are hopeful that additional razorbills will initiate nesting on Seal Island. In conjunction with the puffin restoration efforts, social attraction equipment (sound system and decoys) was utilized to attract terns to the island. After six years of effort, 20 pairs of Arctic and common terns nested on the

island in 1989. The colony has increased dramatically since that time, with 1,057 pairs of Arctic terns and 1,582 pairs of common terns nesting in 2002. Seal Island is now home to the largest tern colony in Maine.

Leach's storm-petrel, black guillemot, common eider, great cormorant, great black-backed and herring gulls also nest on the island. The island is also only one of ten islands in Maine that hosts nesting great cormorants. Small numbers of roseate terns have also nested on the island in recent years.

We continue to work cooperatively with National Audubon Society on the Seal Island



Seal Island
USFWS photo

seabird restoration project. Biological technicians staff the island, conduct biological surveys (food and productivity studies), annually census the island, control predators, and band seabirds. Researchers are currently supporting Arctic tern and Atlantic puffin research projects in cooperation with the University of New Brunswick. Annual survey and study results are available upon request at Refuge Headquarters. Table 3-21 presents the nesting seabirds known on the island.

In 2000, Seal Island was recognized as the largest gray seal pupping island in Maine. In 1999, winter flights were conducted to count seals, and they estimated 400 adults and 150-200 pups were on the island (Gilbert, Univ of Maine, 1999). The island is also used by harbor seals as a pupping island.

Raptor surveys were conducted in 1997 and 1998 (Drury 1997, and Drury and Goodhue 1998). The island is considered an important foraging area for migrating peregrine falcons and other raptors.

The island is closed to public access year round due to the presence of unexploded ordnance. Information signs alerting visitors to the closure are in place.

Table 3-21 Nesting seabird species, number of pairs, (and year) observed on Seal Island

Species	Number of pairs (and year) observed
Arctic tern	16 ('89), 180 ('90), 517 ('95), 890 ('00), 1057 ('02)
common tern	1 ('89), 80 ('90), 645 ('95), 1205 ('00), 1582 ('02)
Atlantic puffin	0 ('91), 7 ('92), 26 ('95), 126 ('00), 181 ('02)
common eider	200 ('77), 324 ('86), 285 ('95), 465 ('96)
double-crested cormorant	38 ('76), 35 ('84), 23 ('95), 22 ('96)
great cormorant	4 ('94), 8 ('95), 8 ('96), 12 ('00), 18 ('01), 27 ('02)
Leach's storm-petrel	724 ('94)
great black-backed gull	300 ('76), 221 ('95), 129 ('98)
herring gull	800 ('76), 110 ('95), 90 ('98)

* Some years individual adults were counted instead of pairs.

17) Roberts Island (CIREG 63-174; Map 3-13)

This 10-acre island is located in the Town of Vinalhaven, Knox County. The island was acquired in 1995 as a gift from the Vinalhaven Land Trust.

The vegetation on the island is dominated by mixed grasses and a few stand of shrubs. The north end of the island has a cobble beach, and a portion of the island raises 120' above sea level. In addition to supporting a variety of nesting seabirds, the island supports roosting and feeding bald eagles, feeding harlequin and black ducks, migrating peregrine falcons, harriers, sharp-shinned hawks, merlin, and brant. Mink predation has been a significant problem on the island, and in some years they have eliminated all black guillemot productivity. A contract was awarded to a local trapper for several years in an effort to remove the mink. Although several mink have

been removed, additional animals continue to swim to the island from Vinalhaven. A fall raptor migration study was conducted in 1998 (Drury & Goodhue 1998). Table 3-22 presents nesting seabirds known on the island.

The Maine Department of Inland Fisheries and Wildlife has recognized the island's significance to wildlife in the Penobscot Bay Conservation Plan (Maine State Planning Office, 1987). The island has been included in the State of Maine Natural Areas Program since December 1977.

The island is closed to public access during the seabird nesting season: April 1 to August 31. Informational signs alerting visitors to the closure are in place.

Table 3-22 Nesting seabird species, number of pairs, (and year) observed on Roberts Island

Species	Number of pairs* (and year) observed
common eider	350 ('77), 700 ('86), 272 ('96)
black guillemot	40 ('86), 103 adults ('94), 7 ('97), 4 ('98), 40-60 adults ('99)
herring gull	100 ('77), 150 ('86), 425 ('96)
great black-backed gull	10 ('77), 50 ('86), 10 ('96)
double-crested cormorant	67 ('86), 80 adults ('94)

* In some years, individual adults were counted instead of pairs.

18) Little Roberts Island (CIREG 63-175; Map 3-13)

This 1-acre island is located in the Town of Vinalhaven, Knox County. The island was acquired as a gift in 1995 from the Vinalhaven Land Trust.

Vegetation on the island is dominated by mixed grasses and ericaceous shrubs. The island is one of ten islands in Maine to support nesting of great cormorant. The island also supports nesting of black guillemot, common eider, great black-backed gull, and herring gull. As with Roberts Island, mink predation continues to be a management concern for this island.

The island is closed to public access during the seabird nesting season: April 1 to August 31. Informational signs alerting visitors to the closure are in place.

Table 3-23 Nesting seabird species (and year) observed on Little Roberts Island

Species	Number of pairs* (and year) observed
common eider	50 ('77); 100 ('81); 25 ('86)
black guillemot	15 ('77); 110 adults ('95); 62 adults ('95)
herring gull	25 ('77), 10 ('86); 22 ('96)
great black-backed gull	5 ('86); 21 ('96)
double-crested cormorant	148 ('77); 302 ('81), 138 ('86); 7 ('95), 100 ('99)
great cormorant	3 ('94); 6 ('95); 1 ('96); 3 ('97); 30 ('98), 10 ('00); 13 ('01); 21 ('02)

* In some years, individual adults were counted instead of nesting pairs.

19) Bar Island (CIREG 59-244; Map 3-16)

The Refuge acquired 17.2 acres of this island in fee simple from The Nature Conservancy in 1994. It is located in the Town of Tremont, Hancock County. The northern half of the island is privately owned and contains several seasonal homes. The vegetation on the Service-owned portion of

the island is a mix of habitats including grassy meadow with small shrubs and red spruce trees.

The island supported several hundred pairs of common eider in the 1970’s and early 1980’s, however the population was eliminated by avian cholera in the mid 1980’s. Table 3-24 presents the nesting seabirds known on the island.

No public access closures are currently being implemented because there has been no recent seabird activity.



Bar Island
USFWS photo

Table 3-24 Nesting seabird species, number of pairs, (and year) observed on Bar Island.

Species	Number of pairs (and year)observed
common eider	700 ('76), 400 ('77), 450 ('81), 20 ('84)
herring gull	2000 ('76), 300 ('77), 20 ('84), 4 ('85)
great black-backed gull	300 ('76), 1 ('85)
double-crested cormorant	15 ('77), 0 ('84)

* Some years individual adults were counted instead of pairs.

20 & 21) Eastern and Western Barge islands (CIREG 59-342 and 59-343 respectively; Map 3-16)

The Service acquired each of these 0.5-acre islands in fee simple from The Nature Conservancy in 1994. They are located in the Town of Tremont, Hancock County. The Barge islands are essentially rock ledges with areas of mixed grasses. The ledges support nesting gulls, common eider, and cormorants, and provide a haul out area for seals. Table 3-25 presents the nesting seabirds known on the island. Surveys completed in 1993 and 2002 recorded over 100 seals on West Barge. Observers recorded 35 seals on East Barge in 1993, and 75 seals in 2002 (Gilbert, Univ. of Maine, pers. com.).

These islands are closed to public access during the seabird nesting season: April 1 to July 31. Informational signs alerting visitors to this closure may not be feasible do to the geology of the islands (rock ledge) or necessary, due to the small size and difficulty accessing the islands.

These islands are open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-25 Nesting seabird species, and year (and year) observed on Eastern and Western Barge Islands

Species	Number of pairs (and year) observed	
	Eastern Barge	Western Barge
common eider	10 ('77), 3 ('84), 2 ('94)	1 ('76), 1('84), 1 ('94)
herring gull	0 ('84), 3 ('89), 1('94)	10 ('93), 0 ('95)
great black-backed gull	20 ('77), 8 ('84), 2 ('89), 12 ('94)	50 ('77), 14 ('84), 22 ('89), 20 ('95)
double-crested cormorant	25 ('76), 115 ('77), 85 ('84), 7 ('92), 27 ('94)	280 ('77), 259 ('79), 5 ('84), 66 ('89), 111 ('94), 104 ('97)

* Some years individual adults were counted instead of pairs.

22) Ship Island (CIREG 59-341; Map 3-16)

The 11.2-acre Ship Island was acquired in fee simple from The Nature Conservancy in 1994. It is located in the Town of Tremont, Hancock County. The adjacent Trumpet Island is accessible at low tide by an intertidal bar. The majority of the vegetation on Ship Island is dominated by grasses and ericaceous shrubs, including rugosa rose, raspberry, elder, and Angelica. A small stand of black cherry is located on the northern end of the island. The western shore of the islands is comprised of an extensive sandy beach, while the remainder of the island is surrounded with cobble.

Historically, Ship Island supported over 300 common tern nests, while an additional 500 pairs nested on Trumpet Island. However, by the 1930's gulls had eliminated all nesting by terns. In 1993, a tern restoration project was initiated on these islands through a cooperative agreement with The Nature Conservancy. Gull control was initiated and continued through 1995. After more than a 50-year absence, terns returned to Ship Island in

1995 with a single nesting pair of common terns. The colony continued to grow and in 1999, 558 pairs of common terns nested. The colony completely abandoned the island during the 2000 nesting season, presumably due to mammalian predators. During the 2001 season, 261 pairs of terns established nests, but abandoned the island after a mink arrived on the island. Terns attempted to nest on the island during the 2002 season, but once again abandoned the island early in the nesting season. All efforts to trap predators have been unsuccessful. Table 3-26 presents the nesting sea-birds known on the island.



Ship Island
USFWS photo

Refuge biological technicians staff Ship Island, conducting biological surveys on the tern colony (food and productivity studies), predator control and banding. Vegetation management to improve and maintain tern nesting habitat is on-going using vegetation mats and mechanical disturbance.

Also of note is the fact that an avian cholera epidemic in the early 1980's significantly reduced the common eider population on Ship Island.

The island is closed to public access during the seabird nesting season: April 1 to August 31. The island has informational signs alerting visitors to this closure.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-26 Nesting seabird species, numbers of pairs, (and year) observed on Ship Island

Species	Number of nests (and year) observed
common eider	200 ('76), 300 ('77), 25 ('81), 115 ('84), 115 ('92), 71 ('96)
herring gull	250 ('76), 115 ('83), 345 ('89), 87 ('94), 0 ('96), 0 ('02)
great black-backed gull	250 ('76), 131 ('81), 136 ('92), 0 ('96), 0 ('02)
double-crested cormorant	350 ('76), 440 ('77), 442 ('79), 3 ('84), 0 ('94), 0 ('02)

* Some years individual adults were counted instead of pairs

23) Trumpet Island (CIREG 59-340; Map 3-16)

This 3.2-acre island was acquired in fee simple from The Nature Conservancy in 1994. It is located in the Town of Tremont, Hancock County. The adjacent Ship Island is accessible at low tide by an inter-tidal bar. The majority of the vegetation on Trumpet Island is dominated by dense stands of raspberry, rugosa rose, and elder.

Historically, Trumpet Island supported over 500 pairs of common terns, while Ship Island supported an additional 300 pairs of terns. However, by the 1930's gulls had eliminated all nesting by terns. (See Ship Island summary for details of tern restoration effort.) In the late 1980's and early 1990's, hundreds of cormorants were illegally shot and clubbed to death on the island. Table 3-27 presents nesting seabirds known on the island.

As noted for Ship Island, an avian cholera epidemic in the early 1980's significantly reduced the common eider population on adjacent islands. A single pair of American oystercatcher have also nested on the island for the past several years.

The island is closed to public access during the seabird nesting season: April 1 to July 31. Trumpet Island has informational signs alerting visitors to this closure.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-27 Nesting seabird species, number of pairs, (and year) observed on Trumpet Island

Species	Number of nests (and year) observed
common eider	150 ('77), 164 ('81), 348 ('84), 330 ('89), 200 ('94), 112 ('96)
herring gull	50 ('77), 100 ('82), 74 ('84), 48 ('89), 7 ('94)
great black-backed gull	50 ('77), 25 ('82), 61 ('84), 72 ('89), 43 ('94)
double-crested cormorant	636 ('83), 290 ('89), 487 ('92), 338 ('95), 0 ('96), 0 ('02)

* Some years individual adults were counted instead of pairs.

24) Little Marshall Island (CIREG 59-470; Map 3-14)

This 16.5-acre eagle nesting island is located in the Town of Swan's Island, Hancock County. The Service purchased the island in 2000. The island is dominated by mixed hardwoods, red spruce, and balsam fir.

Bald eagles were first observed nesting on the island in 1986. Although the pair has used several different trees for nesting, they have consistently nested on Little Marshall since 1986.

The island is closed to public use during the bald eagle nesting season: February 15 to August 31. Informational signs alerting visitors to this closure period are planned.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

25) John's Island (CIREG 59-483; Map 3-15)

This 43-acre island, located in the Town of Swan's Island, Hancock County, was acquired in 1998 in fee simple from a private individual. It is vegetated by grasses and herbs, with a few stands of shrubs, including choke cherry, winterberry, and elder. Raspberry dominates much of the vegetated area, with approximately 25% of the island's vegetation comprised by this one species. The perimeter of the island consists of granite ledge, ranging from gradual slope to steep cliff.

This island is a harbor seal pupping ground, and 144 animals were observed in 1997 (Gilbert, Univ. of Maine, pers. comm.). An aerial survey of John's Island completed in June 2002 recorded 169 harbor seals, including 60 seal pups (Gilbert, Univ. of Maine, pers. comm.). It supports common eiders, great and double-crested cormorants, and black-backed and herring gulls, and is one of only ten islands in Maine with nesting great cormorants. A botanical survey was conducted in 1999 and 2000 by Mittelhauser and Morrison. Of note is the identification of a State-listed Species of Special Concern, seabeach sedge (*Carex silica*). Table 3-28 presents nesting seabirds known on the island.

John’s Island is closed to public use during the seabird nesting season: April 1 to August 31. Informational signs alerting visitors to this closure period are planned.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-28 Nesting seabird species, number of pairs, (and year) observed on John's Island

Species	Number of pairs (and year) observed
black guillemot	300 ('86), 225 ('95), 250 ('00)
common eider	75 ('77), 400 ('86), 1000 ('96); 277 females ('00)
great black-backed gull	150 ('76), 400 ('86), 234 ('95), 78 ('00)
herring gulls	100 ('77), 600 ('86), 288 ('95), 97 ('00)
double-crested cormorant	55 ('76), 182 ('84), 158 ('95), 100 ('96), 35 ('99), 42 ('00)
great cormorant	4 ('93), 20 ('95), 17 ('96); 4 ('98), 1 ('00), 0 ('02)

* Some years individual adults were counted instead of pairs.

26) Egg Rock (CIREG 59-301; Map 3-17)

This 12-acre island was transferred to the Service in 1999 under the Maine Lights Bill of 1996. The island lies at the entrance of Frenchman Bay, in the Town of Winter Harbor, Hancock County. A significant portion of the island is dominated by rock out-croppings, with the remainder of the island dominated by mixed grasses, Angelica, and goldenrod.

The Egg Rock lighthouse, owned by the Service, is on the National Historic Register. It has undergone significant renovations in recent years.

The island’s historical significance for colonial nesting seabirds is well documented. Roseate, common, and Arctic terns all nested on Egg Rock after an increasing gull population caused terns to abandon Petit Manan Island in the early 1980’s. In 1981, 300 pairs of common and Arctic terns

nested on the island. In 1984, three pairs of endangered roseate terns also nested on Egg Rock. However, when we initiated gull control efforts on Petit Manan Island in 1984, the terns returned to that location abandoning Egg Rock. Terns have not nested on Egg Rock since 1984. Seabirds and their nesting status on the island are listed in Table 3-29.

In addition to the species noted above, black guillemots and Leach’s storm-petrels also nest on the island. Harbor seals use Egg Rock as a haul out area. A survey completed in June 2002 documented 297 seals on Egg Rock, including 75 seal pups (Gilbert, Univ of Maine, pers. com.).



Egg Rock lighthouse
USFWS photo

This island is closed to public use during the seabird nesting season: April 1 to August 31. Informational signs alerting visitors to this closure period is planned. Local tour boats periodically come close to the island to view the seabirds and seals, and to interpret the lighthouse.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-29 Nesting seabird species, number of pairs, (and year) observed on Egg Rock Island

Species	Number of pairs* (and year) observed
common terns	300 pairs of common & Arctic terns ('81), 325 ('84)
Arctic terns	60 ('84)
roseate terns	3 ('84)
common eider	15 ('89), 34 ('94), <5 ('99), 20 ('01)
great black-backed gull	56 ('89), 5 ('94), 65 ('95), <10 ('00); 12 ('01)
herring gulls	48 ('89), 241 ('92), >200 ('99); >150 ('00); 414 ('01)
laughing gulls	175 adults ('81)

* Some years, individual adults were counted instead of pairs.

27) Abbott Island (CIREG 79-837; Map 3-19)

This 3.5-acre island is located in Carrying Place Cove, Town of Steuben, Washington County. The Service acquired the island in fee simple from a private party in 1996. It is dominated by conifer forest, with some understory vegetation species that are not found on the adjacent mainland: Indian cucumber root (*Medeola virginiana*), painted trillium (*Trillium undulatum*), bluebead-lily (*Clintonia borealis*), and hobblebush (*Viburnum alnifolium*). Striped maple (*Acer pensylvanicum*) and various orchids are also found here. The mud flats surrounding the island are used by migrating shorebirds and waterfowl, including black duck, mallard, goldeneye, and teal.

It is open to waterfowl hunting under State and Refuge regulations.

28) Sally Island (CIREG 79-836; Map 3-19)

This 1-acre island is located in Dyer Bay, Town of Steuben, Washington County. It was acquired in August 1996 by donation from The Conservation Fund. The island is connected to Petit Manan Point at low tide, and is characterized by a dense spruce stand. Bald eagles were first observed nesting on the island in 1985. The pair experienced alternating years of nest occupancy until they moved to the adjacent island in 2001. No other botanical or biological surveys are known to us.

When occupied by bald eagles, the island is closed to public access during the eagle nesting season: February 15 to August 31. If eagles are not nesting on the island, Sally Island is open to public visitation (day use) after May 15th. Informational signs alerting visitors to the closure are planned.

29) Petit Manan Island (CIREG 79-933; Map 3-18)

This 10-acre island lies 2.5 miles south of Petit Manan Point in the Town of Steuben, Washington County. It was acquired in 1974 by transfer from the U.S. Coast Guard. The Coast Guard continues to maintain the 119' lighthouse tower and navigational aids, and the Service maintains several historical structures on the island. Petit Manan has long been considered one of the most important islands in the Gulf of Maine for colonial nesting seabirds.

Botanical inventories, including those for rare plants, were conducted in 1995, 2001, and 2002 (Widrig 1996 and Mittelhauser 2002). Vegetation on the north and east side of the island includes a variety of grasses, Angelica, raspberry, asters, meadowrue, blueberry, and beachpea. The southwestern and central areas of the island are dominated by a dense stand of raspberry which is rapidly expanding each year. Calamagrostis occupies a large portion of the western half of the island. The invasive species dodder established a strong foothold on the northern end of the island in 2000. Extensive vegetation management occurs, utilizing a variety of techniques such as burning, herbicide, and mechanical treatment to improve nesting seabird habitat. Annual monitoring of this vegetation and its response to treatment dictates what to do in forthcoming years.



Dodder, an invasive plant, has established a strong foothold on Petit Manan Island
USFWS photo

Significant numbers of terns had historically nested on the island, including 1,500 nesting pairs observed in 1971. However, when human presence on the island ended with automation of the light station in 1972, the numbers of nesting gulls gradually increased to the point they excluded all nesting terns by 1983. Tern restoration was initiated in 1984 in partnership with the College of the Atlantic. One of the first actions was the removal of herring and black-backed gulls. Within one week of the gull control effort, terns returned to nest on Petit Manan Island. The seabird colony has continued to grow, and the island now supports nesting by eight species of seabirds and waterfowl. Razorbill and common murre also routinely visit the island, however no nesting efforts have been

documented. Leach's storm-petrels and black guillemots also nest on the island. The island also supports migrating songbirds, shorebirds and raptors. Table 3-30 presents the nesting seabirds known on the island. An annual report is available upon request from Refuge Headquarters.

Biological technicians live on the island each nesting season and conduct biological surveys (food and productivity studies), predator control and banding. Our staff and seasonal technicians conduct a complete census of the island each year; and record observations of all species observed on or adjacent to the island. Habitat restoration work continues as a cooperative endeavor with the Gulf of Maine Seabird Working Group and MDIFW. We are currently participating in Arctic tern and Atlantic puffin metapopulation studies with the University of New Brunswick.

The results of a spider inventory (Jennings 2000) and botanical inventory (Mittlehauser 2000) for this island is also available at Refuge Headquarters .

The island is a popular tour boat destination. Several tour boats per day pause offshore to observe the island's seabirds during June - August. Refuge staff meet annually with the tour boat companies to discuss issues of concern, and we provide them with periodic updates throughout the seabird nesting season.

Petit Manan Island is closed to public access during the seabird nesting season: April 1 to August 31. It is open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-30 Nesting seabird species, number of pairs (and year) observed on Petit Manan Island

Species	Number of pairs (and year) observed
common tern	700 ('76), 6 ('81), 410 ('84), 1093 ('90), 1355 ('95), 990 ('02)
Arctic tern	800 ('76), 450 ('84), 729 ('90), 796 ('95), 671 ('02)
roseate tern	3 ('76), 8 ('84), 48 ('90), 61 ('95), 27 ('02)
Atlantic puffin	0 ('84), 7 ('90), 13 ('95), 20 ('02)
laughing gull	60 ('76), 200 ('84), 300 ('91), 487 ('95), 838 ('02)
common eider	6 ('76), 10 ('84), 20 ('89), 53 ('95), 113 ('02)

* Some years individual adults were counted instead of pairs.

30) Bois Bubert Island (CIREG 79-824; Map 3-20)

The Service owns in fee simple 1,321 acres of this 1,500-acre island in the Town of Milbridge, Washington County. Portions of the island were acquired in 1979 and 1987 by donation and purchase from The Nature Conservancy, and in 1987, 1994, and 1997 by purchase from private

parties. The island is located about one mile east of Petit Manan Point, and is characterized by red and white spruce forests, balsam fir, tamarack, and associated hardwoods. Two freshwater wetlands are also located on the island, as well as an extensive area of early successional habitat. A cover type map utilizing national vegetation classification standards was completed in 2002 (Map 3-26).

The island's jack pine woodlands represent two of only eight known stands in Maine, and are considered a rare community type by the Maine Natural Areas Program (MNAP 1983 and Elliott 1999). Although jack pine is occasionally a component of other forest communities, this woodland type is the only community with jack pine as the dominant species. Our long-term goal in maintaining these stands is to continue providing a diversity of habitats within the Refuge, and to contribute to the ecological diversity of coastal Maine.

Other rare plants are present on Bois Bubert as well. The State-listed threatened Nova Scotia false-foxglove (*Agalinis neoscotica*) occurs on the island as does bird's eye primrose (*Primula laurentia*), a State species of special concern (Widrig 1996).

Bald eagles were first observed nesting on the island in 1996, and with the exception of 2000, have produced at least one eaglet per season. The wetland on the southern end of the island and the surrounding inter-tidal habitat provide extensive stopover habitat for waterfowl during fall migration. Limited waterfowl banding has occurred on the island.

The results of a spider inventory for this island are available at Refuge Headquarters (Jennings 2001).



Freshwater pond on Bois Bubert Island
USFWS photo

Currently, we are working cooperatively with the Maine Island Trail Association and others to provide low impact educational and recreational opportunities for island users, including overnight camping. The Refuge owns one cabin on the island that can be used to house researchers. Several private inholdings include seasonal homes on the island.

One Refuge area on the southern end of the island is closed year-round to protect nesting and roosting birds. Additional informational and regulatory signs are needed to alert visitors to this closure.

Refuge lands on the island are open to deer hunting under State and Refuge regulations.

31) Nash Island (CIREG 79-627; Map 3-21)

The Service owns five acres of the 16.7 acre grassland island located in the Town of Addison, Washington County. The Service acquired the property by transfer from the Coast Guard in 1978; the remainder of the island is privately owned. The island supports a variety of nesting seabirds, including a small number of nesting terns, as indicated in Table 3-31.

Sheep grazing occurs on the neighboring Big Nash island. Sheep routinely use an inter-tidal bar to graze on Nash Island.

Nash Island is closed to public access during the seabird nesting season: April 1 to August 31. Informational signs alerting visitors to this closure are in place.

Table 3-31 Nesting seabird species, number of pairs, (and year) observed on Nash Island

Species	Number of pairs (and year) observed
common eider	20 ('77), 6 ('87), 50 ('89)
common tern	5 ('84), 1 ('98), 4 ('00), 4 ('02)
Arctic tern	20 ('84)
great black-backed gull	50 ('87), 120 ('95)

* Some years individual adults were counted instead of pairs.

32) Inner Sand Island (CIREG 79-614; Map 3-21)

This 17.8-acre island in the Town of Addison, Washington County, was acquired in 1999 in fee simple from a private party. The island is composed of 15 acres of spruce/fir forest and approximately 2.8 acres of upland meadow and shrub.

Although the island has historically supported nesting gulls, none were observed during the 1995 aerial survey of the island. Table 3-32 presents nesting seabirds known on the island.

This island is closed to public use during the seabird nesting season: April 1 to July 31. Informational signs alerting visitors to this closure period are planned.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-32 Nesting seabird species, number of pairs, (and year) observed on Inner Sand Island

Species	Number of pairs* (and year) observed
common eider	125 ('77), 200 ('89)
great black-backed gull	100 adults ('76), 10 ('77), 5 ('89), 0 ('95)
herring gulls	1000 adults ('76), 150 ('77), 20 ('89), 0 ('95)

* In some years, individual adults were counted instead of pairs.

33) Schoppee Island (CIREG 79-566; Map 3-22)

This 16.5-acre island is located in the Town of Roque Bluffs, Washington County. The Service acquired the island in fee simple in 2000. The island is dominated by red spruce with small areas of hardwoods, grasses and shrubs. There is evidence of wind-throw over the years, resulting in a patchwork appearance created by a diversity of age classes and tree height. Hardwood species found on the island include white and yellow birch, mountain ash, and alder.



Schoppee Island
USFWS photo

Schoppee Island is a historic bald eagle nesting island. Eagles were first observed nesting on the island in 1968, however the site was not monitored during the 1970's. They were again documented nesting on the island in 1980, but that was the last year they nested on the island.

The island is closed to public access during the bald eagle nesting season: February 15 to August 31. If eagles have not initiated nesting on the island by May 15, the island is then open to day use by the public. Informational signs alerting visitors to the closure are planned.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

34) Halifax Island (CIREG 79-570; Map 3-22)

This 75-acre island is located in the Town of Jonesport, Washington County. The island was acquired in fee simple in June 1995 from The Conservation Fund.

Island vegetation is comprised of 45 acres of wetland and peatland communities, and 30 acres of various ericaceous shrub-dominated communities (huckleberry, sheep laurel, Rhodora, blueberries, crowberries, and small trees). There are also lichen-covered rock outcrops, sparsely vegetated nearshore headlands and cliffs, and beach strand. Several extremely fragile plant communities can be found here (acidic fen, plateau bog lawn, dwarf shrub bog, moss lawn bog, and acidic shoreline outcrop).

A baseline avian and botanical survey was conducted in 1998 and 1999 (Famous and Spencer-Famous 1999). Of note on the island are:

- maritime slope bog community; a very rare community type
- northern yarrow (*Achillea millefolium var. borealis*); a State Species of Special Concern
- pearl-wort (*Sagina nodosa*); a State rare species

- dragon's mouth orchid (*Arethusa bulbosa*); a State rare species
- roseroot stonecrop (*Sedum rosea*), beachhead iris (*Iris hookeri*), and oysterleaf (*Mertensia maritima*)

A nationally significant population of fall migrating whimbrels forages on the crowberries growing on Halifax Island. Black guillemots were recorded nesting on the island during surveys from 1965-73 showing eight nesting pair, and in 1977 when two nesting pair were observed. No sea-birds have been recorded nesting on the island since then.

Historically, sheep were grazed on the island; however, this practice was discontinued in the 1980's. Currently, we are working cooperatively with the Maine Island Trail Association and others to provide low impact educational and recreational opportunities for island users, including overnight camping.

A majority of the island is closed year-round to public access to protect unique botanical features. The western portion of the island is open year round. Informational signs are in place alerting visitors to the closure and the sensitive plant habitat areas.

This island is open to migratory waterfowl hunting under State and Refuge regulations.

35) Eastern Brothers Island (CIREG 79-513; Map 3-22)



Eastern and Western Brothers Islands
USFWS photo

This 17-acre island in the Town of Jonesport, Washington County, is a recognized seabird nesting island and historical nesting area for peregrine falcons. The Service acquired the island in fee simple in May 1997 from a private party. The MDIFW owns Western Brothers Island, which is joined to Eastern Brothers by an intertidal area.

The vegetation on the island is dominated by mixed grasses, raspberries, and other herbaceous species. The perimeter of the island is surrounded by rock ledges of varying height and associated 60- to 70-foot rock cliffs. Sheep were grazed on the island for over 125 years;

however, the practice was discontinued in the late 1990's. A complete avian and botanical inventory was conducted in 1998 and 1999 (Famous and Spencer-Famous 1999). Notable plant species include:

- northern yarrow (*Achillea millefolium*); a State Species of Special Concern
- Arctic blue flag (*Iris setosa*); a State rare species (over 20,000 plants observed on the island)
- dragon's mouth orchid (*Arethusa bulbosa*); a State rare species

- pearl-wort (*Sagina nodosa*); a State rare species
- maritime slope bog; a rare plant community type

This island is a harbor seal pupping ground, and 112 animals were recorded in 1997 (Gilbert, Univ. of Maine, pers. com.). It also provides habitat for a variety of nesting seabirds including common eiders, black guillemots, herring and great black-backed gulls and Leach’s storm-petrels as indicated in Table 3-33.

The island is closed to public access during the seabird nesting season: April 1 to August 31. Informational signs are in place to alert visitors to this closure.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-33 Nesting seabird species, number of pairs, (and year) observed on Eastern Brothers Island

Species	Number of pairs (and year) observed
common eider	75 ('77), 0 ('83), 40 ('95)
great black-backed gull	600 ('91), 1131 ('95)
herring gulls	0 ('95)
black guillemots	150 ('77), 100 ('83), 75 ('95)
Leach's storm-petrel	25 ('77), 8 ('95)

* Some years individual adults were counted instead of pairs.

36) Libby Island (CIREG 79-360; Map 3-23)

Lying at the entrance of Machias Bay, this 43-acre island was transferred to the Service in 1999, under the Maine Light Bill of 1996. It is located in the Town of Machiasport, Washington County. It is also commonly referred to as “Little Libby” Island. The Service owns and is responsible for the maintenance of the lighthouse and associated historical structures. The Coast Guard is responsible for the aids to navigation.

The island contains a variety of habitats including: dense stands of shrubs (Virginia rose, meadowsweet, and black chokeberry), American cranberry, creeping juniper, and beach strand community. Dwarf ericaceous shrubs and mixed grasses dominate the upland. Two wetland communities were also documented (Bochan and DiGirolamo 1999). Prior botanical inventories had been conducted in the late 1970’s and early 1980’s (Lewis, Univ. of Maine, pers. com.).

Libby Island is adjacent to the MDIFW-owned Big Libby Island, which has supported over 1,500 pairs of common eiders, 1,100 pairs of great black-backed gulls, and 200 herring gulls. In the late 1800’s and early 1900’s Big Libby also was an active tern colony. Mink have been observed on Libby, and it is possible they may have limited seabird use of the island in recent years. Table 3-34 presents nesting seabirds known on the island.

Harbor seals use adjacent ledges as pupping and haulout areas.

A 20-acre aquaculture lease has been granted for the waters immediately north of Big and Libby islands. Although the facility was only operational for one year, the lease remains valid and pens could be placed at the site in the future.

This island is closed to public use during the seabird nesting season: April 1 to August 31. Informational signs alerting visitors to this closure period are planned.

The island is open to migratory waterfowl hunting under State and Refuge regulations.

Table 3-34 Nesting seabird species, number of pairs, (and year) observed on Libby Island

Species	Number of pairs (and year) observed
black guillemot	10 ('76), 5 ('91), 20 ('92), 10 adults ('01)
common eider	0 ('92), 10 ('01)
great black-backed gull	0 ('91), 2 ('01)
herring gull	0 ('91), 40 ('01)

* Some years individual adults were counted instead of pairs.

37) Old Man Island (CIREG 79-313; Map 3-24)

This 6-acre island is part of the Cross Island National Wildlife Refuge complex, located in the Town of Cutler, Washington County. It was acquired in 1980 from a private individual, along with the other five islands in the Cross Island complex .

Vegetation on the island is sparse, with a variety of mixed grasses interspersed with rock outcroppings. Steep cliffs and sea stacks are located along the perimeter of the island. A botanical inventory was conducted on the island during the 1979, 1980, and 1982-84 field seasons (Lewis, Univ. of Maine, pers. com.).

Old Man Island is one of only six nesting sites for razorbills in the Gulf of Maine. Between 130 and 150 adult razorbills were observed annually over a 10-year period. Of historical note, Old Man Island is reported to be the only location within Maine that supported nesting of common eiders in the early 1900's when two nests were observed (Norton 1907). This island also supports other nesting seabird species of interest as noted in Table 3-35.

Although public access on the island will always be limited by the topography of the island, the island is closed to public use during



Old Man Island
USFWS photo

the seabird nesting season: April 1 to August 31. Informational signs alerting visitors to this closure period are planned.

Table 3-35 Nesting Seabird species, number of pairs, (and year) observed on Old Man Island

Species	Number of pairs* (and year) observed
razorbill	10 ('77), 35 ('91), 130-150 adults ('01)
common eider	100 ('77), 14 ('86), 100 ('91), 100 ('95)
great black-backed gull	100 ('77), 29 ('91), 164 ('95)
herring gull	500 ('77), 26 ('91), 126 ('95)
double-crested cormorant	215 ('77), 306 ('91), 302 ('94)
Leach's storm-petrel	400 ('95)
black guillemot	100 ('77), 55 adults ('91), 125 adults ('95)

* In some years, individual adults were counted instead of pairs.

38) Mink Island (CIREG 79-345; Map 3-24)

This 11-acre island is part of the Cross Island National Wildlife Refuge complex, located in the Town of Cutler, Washington County. It was acquired in 1980 from a private individual, along with the other five islands in the Cross Island complex. The island is completely forested with red spruce and balsam fir.

Bald eagles were first observed nesting on Mink Island in 1996. It is believed that one pair of eagles has moved among Mink, Cross, and Outer Double Head Shot Island in recent years. The Mink Island nest was last occupied in 2002. Occupancy and productivity are monitored on an annual basis by MDIFW.

This island is closed to public access during the bald eagle nesting season February 15 to August 31. Informational signs alerting visitors to this closure are planned.

39) Outer Double Head Shot Island (CIREG 79-352; Map 3-24)

This 14-acre island is part of the Cross Island National Wildlife Refuge complex, located in the Town of Cutler, Washington County. It was acquired in 1980 from a private individual, along with the other five islands in the Cross Island complex.

The vegetation on the northern half of the island is dominated by red spruce and balsam fir, while the southern portion of the island is dominated by mixed grasses. A botanical inventory was conducted on the island between 1979 and 1984 (Lewis, Univ. of Maine, pers. com.).

Bald eagles were first observed nesting on Outer Double Head Shot in 1985. It is believed that one pair of eagles has moved among Outer Double Head Shot, Mink, and Cross Islands in recent years. The Outer Double

Head Shot Island nest was last occupied in 2000. Occupancy and productivity are monitored on an annual basis by MDIFW. The island also supports nesting seabird species of interest as noted in Table 3-36.

This island is closed to public access during the bald eagle and seabird nesting season: February 15 to August 31. Informational signs alerting visitors to this closure period are planned.

Table 3-36 Nesting seabird species, number of pairs, (and year) observed on Outer Double Head Shot Island

Species	Number of pairs* (and year) observed
common eider	100 ('77), 0 ('91), 100 ('95)
great black-backed gull	10 ('91), 23 ('95)
herring gull	200 ('95), 30 ('91), 25 ('95)
black guillemot	50 ('77), 140 adults ('95)

* In some years, individual adult birds were counted instead of pairs.

40) Inner Double Head Shot Island (CIREG 79-351; Map 3-24)

This 8-acre island is part of the Cross Island National Wildlife Refuge complex, located in the Town of Cutler, Washington County. It was acquired in 1980 from a private individual, along with the other five islands in the Cross Island complex.

The vegetation on the northern half of the island is dominated by red spruce and balsam fir, while the southern portion of the island is dominated by mixed grasses. A botanical inventory was conducted on the island between 1979 and 1984 (Lewis, Univ. of Maine, pers. com.). The island supports small nesting populations of black guillemot, herring gulls, and Leach’s storm-petrels.

This island is closed to public use during the seabird nesting season: April 1 to August 31. Informational signs alerting visitors to this closure period are in place.



Scotch Island
USFWS photo

41) Scotch Island (CIREG 79-350; Map 3-24)

This 10 acre island is part of the Cross Island National Wildlife Refuge complex, located in the Town of Cutler, Washington County. It was acquired in 1980 from a private individual, along with the other five islands in the complex.

The island is immediately adjacent to the north-east corner of Cross Island. The vegetation on Scotch Island consists of red spruce, balsam fir, and yellow and paper birch.

Scotch Island is open to public access year around (day use only).

42) Cross Island (CIREG 79-347; Map 3-24)

Cross Island (1,654 acres) was acquired in 1980 from a private individual, along with the other five islands in the Cross Island National Wildlife Refuge complex. It is located in the Town of Cutler, Washington County. Two private inholdings occur on the island. Outward Bound has a 19-acre inholding, and uses parts of the island for solo wilderness experiences. The Cabott family also owns a 20-acre inholding.



Cross Island
USFWS photo

Its varied topography includes hills, bays, inlets, high sea cliffs, and several cobble beaches scattered along all but its rugged south shoreline. A 12-acre tidal pond lies between Northwest Head and the island proper. Cover types on the island include dense stands of red and white spruce, balsam fir, yellow and paper birch, and red and striped maple. Several grassy openings with sedges, cranberry, and blueberry are also found on the shores. Associated wetlands support eel grass and other submerged aquatics, saltmarsh and salt meadow cordgrasses, sea lavender, black rush, and American three-square bulrush. A cover-type map of Cross Island is available.

Botanical species of note on the island are livid sedge (*Carex livida*) and coast blite goosefoot (*Chenopodium rubrum*), both State-listed threatened species, and a rare community type called maritime slope bog.

Bald eagles were first observed breeding on Cross Island in 1981. It is believed that one pair of eagles has moved among Cross, Outer Double Head Shot, and Mink Islands in recent years. The Cross Island nest was last occupied in 1994. Occupancy and productivity are monitored on an annual basis by MDIFW.

The island has resident populations of white-tailed deer and furbearers, as well as eagles and osprey. Colonial nesting seabirds include common eider, Leach's storm-petrel, black guillemot, and double-crested cormorants. Migrating black ducks and shorebirds use the island saltmarsh and inter-tidal areas.

The following surveys have been conducted on the island and any published results are available from the Refuge Headquarters upon request:

- Habitat analysis of Cross Island using SPOT imagery (Podolsky & Labaree 1990)
- Deer pellet count (USFWS 1991)
- Neotropical landbird monitoring program (Famous 1993)
- Botanical survey focusing on wetland habitats (Mittelhauser & Morrison 2000)

A 45-acre aquaculture site is located 1/4 mile off Northwest Head. A study to examine the potential effects of aquaculture site development adjacent to the island's nesting birds was conducted in 1991 (Famous 1991). Unfortunately, information was not collected prior to the placement of the aquaculture pens, so comparisons to historic use of the area are not possible.

A Refuge cabin located in Northwest Head is used by researchers under permit.

The island is open to public access year around (day use only). Informational signs are in place alerting visitors.

Outward Bound uses several areas for solo campsites under a special use permit. In addition, Bold Coast Charter, in the Town of Cutler, runs an interpreted tour on the island. Approximately 325 people visit the island annually.

Other Islands Affiliated with the Refuge

Machias Seal Island (Map 3-25)

This 15-acre island is located at the mouth of the Bay of Fundy, 12 miles south of Grand Manan, New Brunswick, Canada, and 12 miles off the coast from the Town of Cutler, Maine. Claimed by both the United States and Canada, the island hosts abundant populations of Atlantic puffins, Arctic terns, common terns, razorbills, and Leach's storm-petrels. In 1944, Canada designated this island area as a Migratory Bird Sanctuary pursuant to the Canadian Migratory Birds Convention Act, as amended. Table 3-37 presents nesting seabirds known on the island.

The island is a popular destination for birding enthusiasts, who visit it each summer to observe and photograph the birds. There is transportation to the island via three chartered cruises (two United States and one Canadian). The MDIFW has established ownership of the island and, under MOU, has transferred management authority to the Service. Under this authority, the Service (through the Refuge) monitors and regulates U.S. tour boat captains. U.S.-based tours during June and July seabird breeding seasons are regulated through the issuance of special use permits. At present, no more than 30 people are allowed to visit the island each day for 3 hours during the months of June and July, and they are restricted to well-marked paths and observation blinds.

By verbal agreement with Canada, Canadian biologists manage the wildlife resources on the island. The University of New Brunswick's Atlantic Co-operative Wildlife Ecology Research Network maintains a research crew on the island. The Service attempts to meet at least annually with Canadian biologists to discuss wildlife issues and exchange information on avian populations, public use, and commercial tourism. An extensive amount of research and survey work has been conducted on the island.

Table 3-37 Nesting seabird species, numbers of pairs (and years) observed on Machias Seal Island

Species	Numbers (and year) observed
Atlantic puffin	1,827 ('00), 2,800 ('01)
razorbill	543 ('01)
common tern	325 ('94), 897 ('98), 1,349 ('02)
Arctic tern	2,140 ('94), 2,094 ('98), 2,202 ('02)
roseate tern	1 ('01)
common eider	132 ('98), 106 ('02)
laughing gull	1 ('02)

* Some years individual adults were counted instead of pairs.



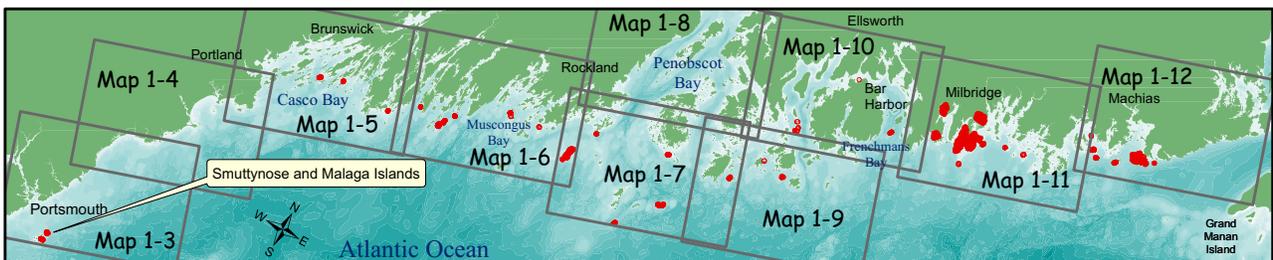
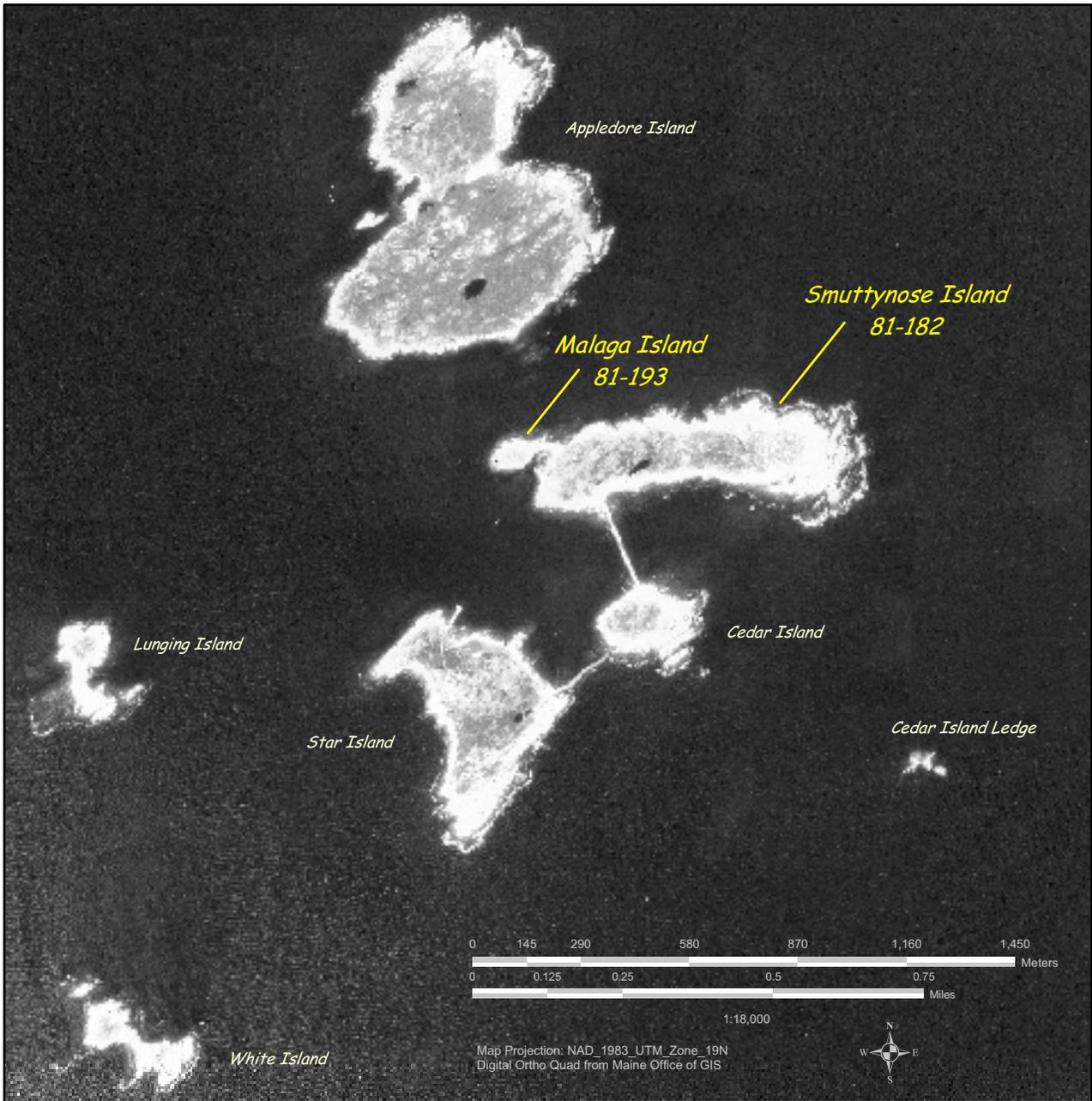
Banded purple sandpiper
USFWS photo



MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT



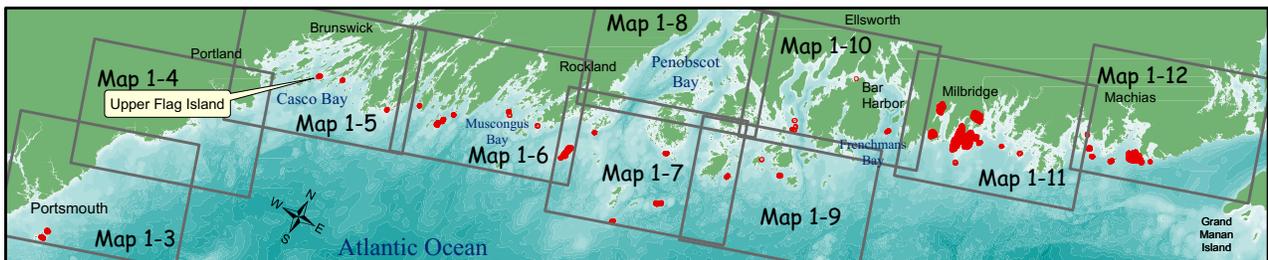
Smuttynose and Malaga Islands





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

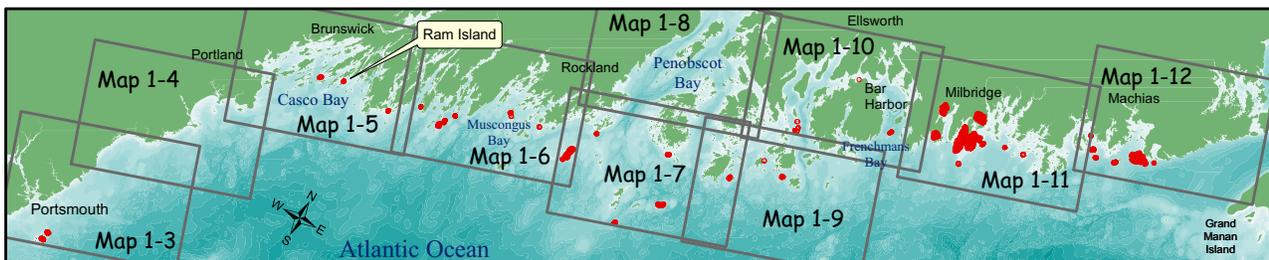
Upper Flag Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

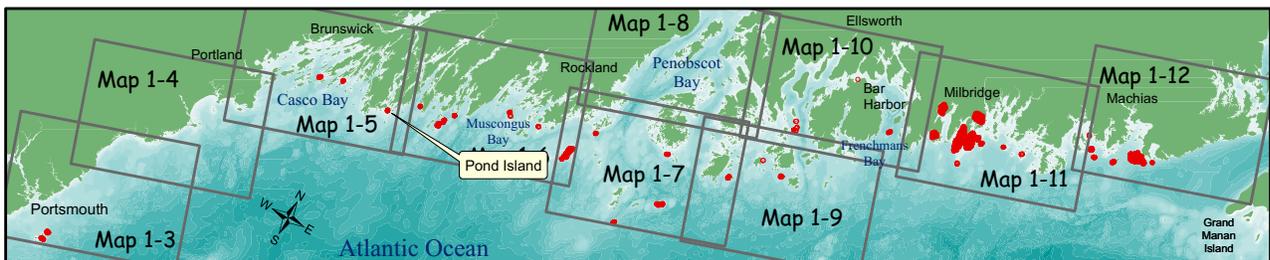
Ram Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

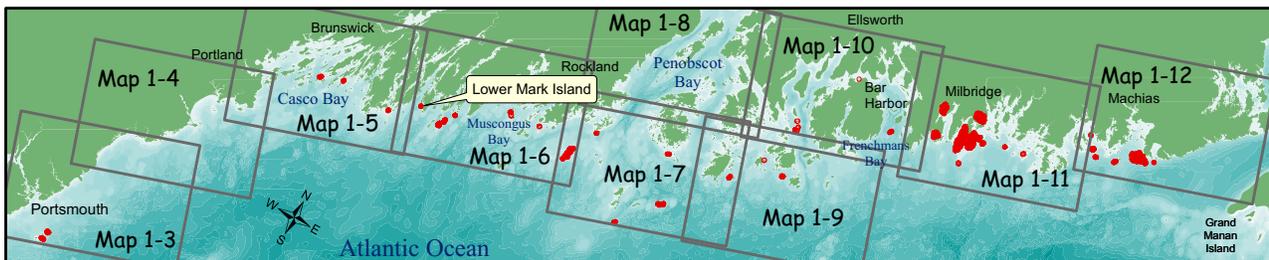
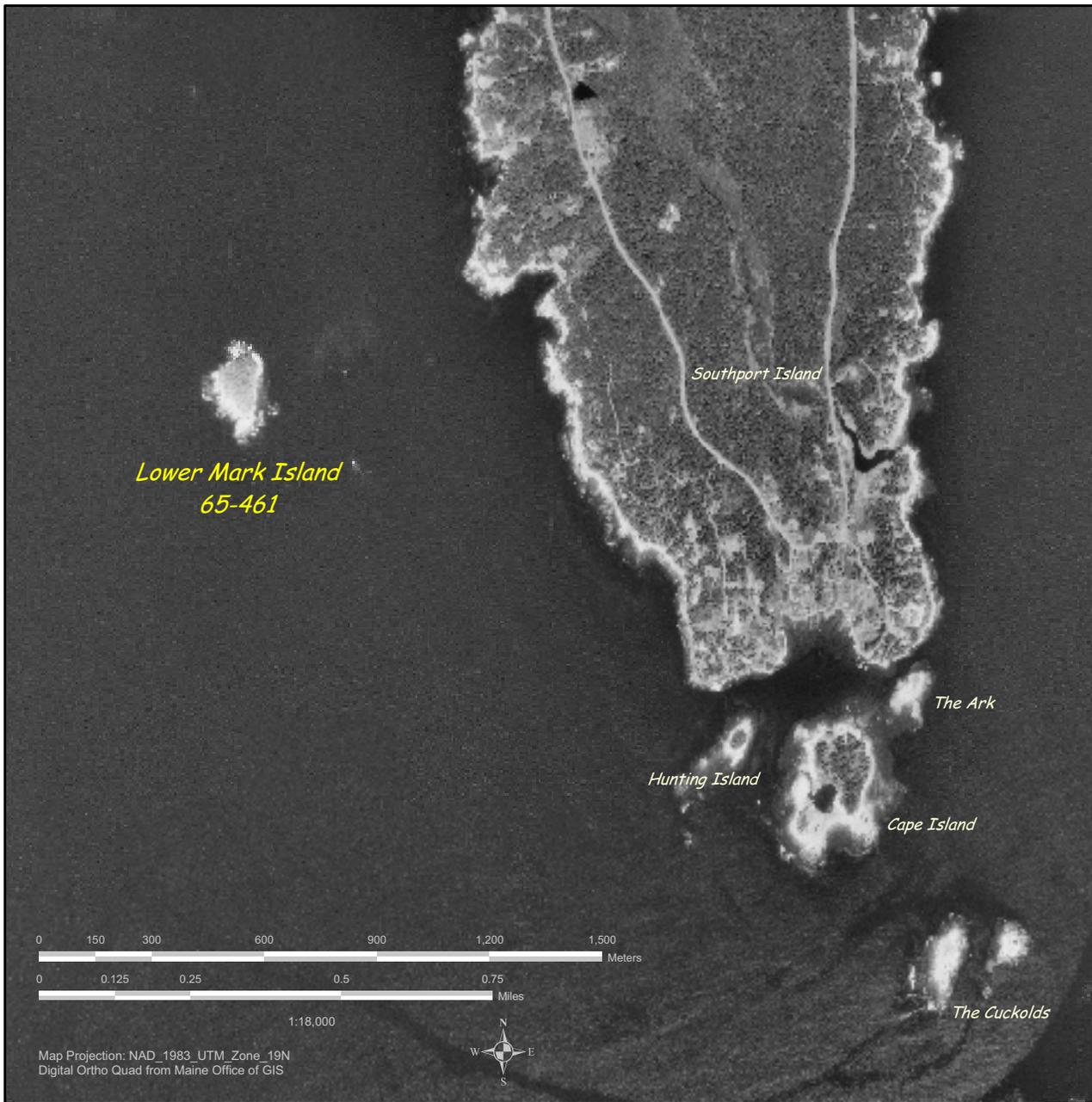
Pond Island National Wildlife Refuge





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

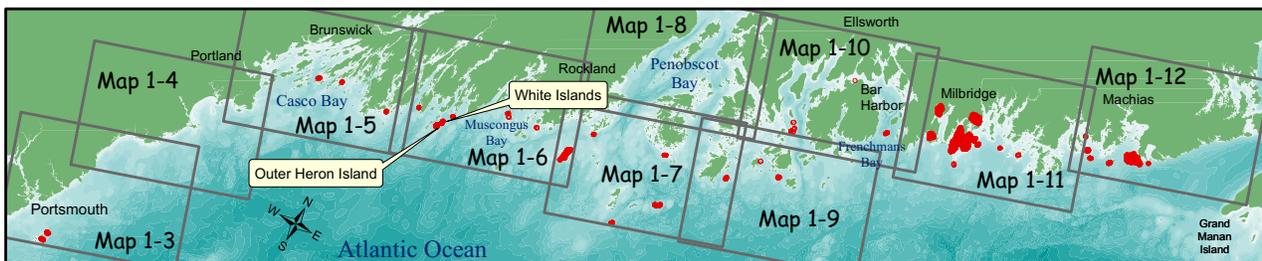
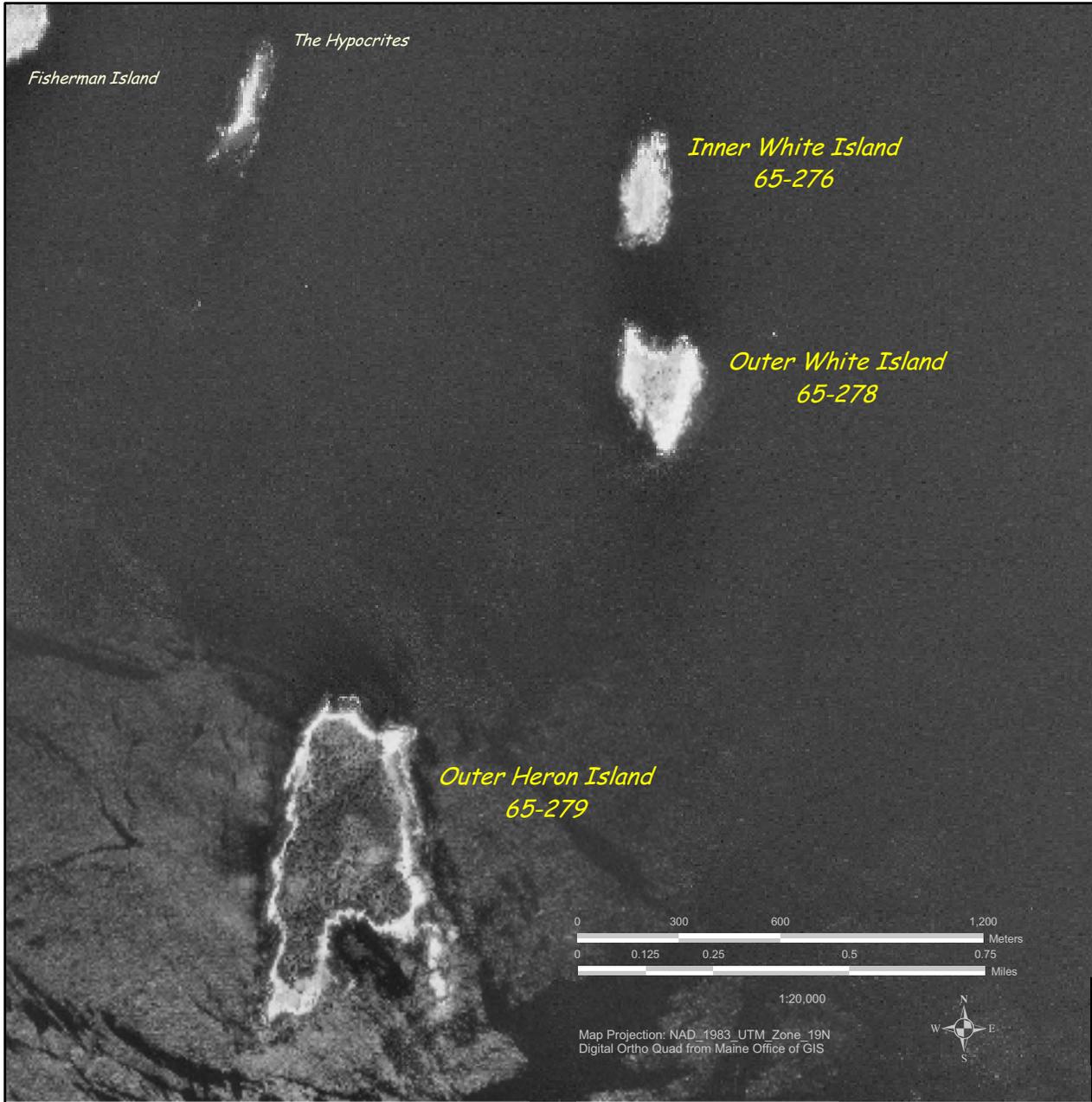
Lower Mark Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

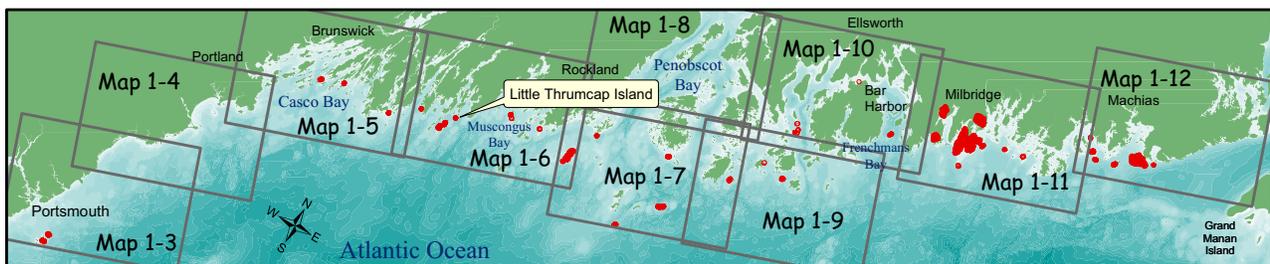
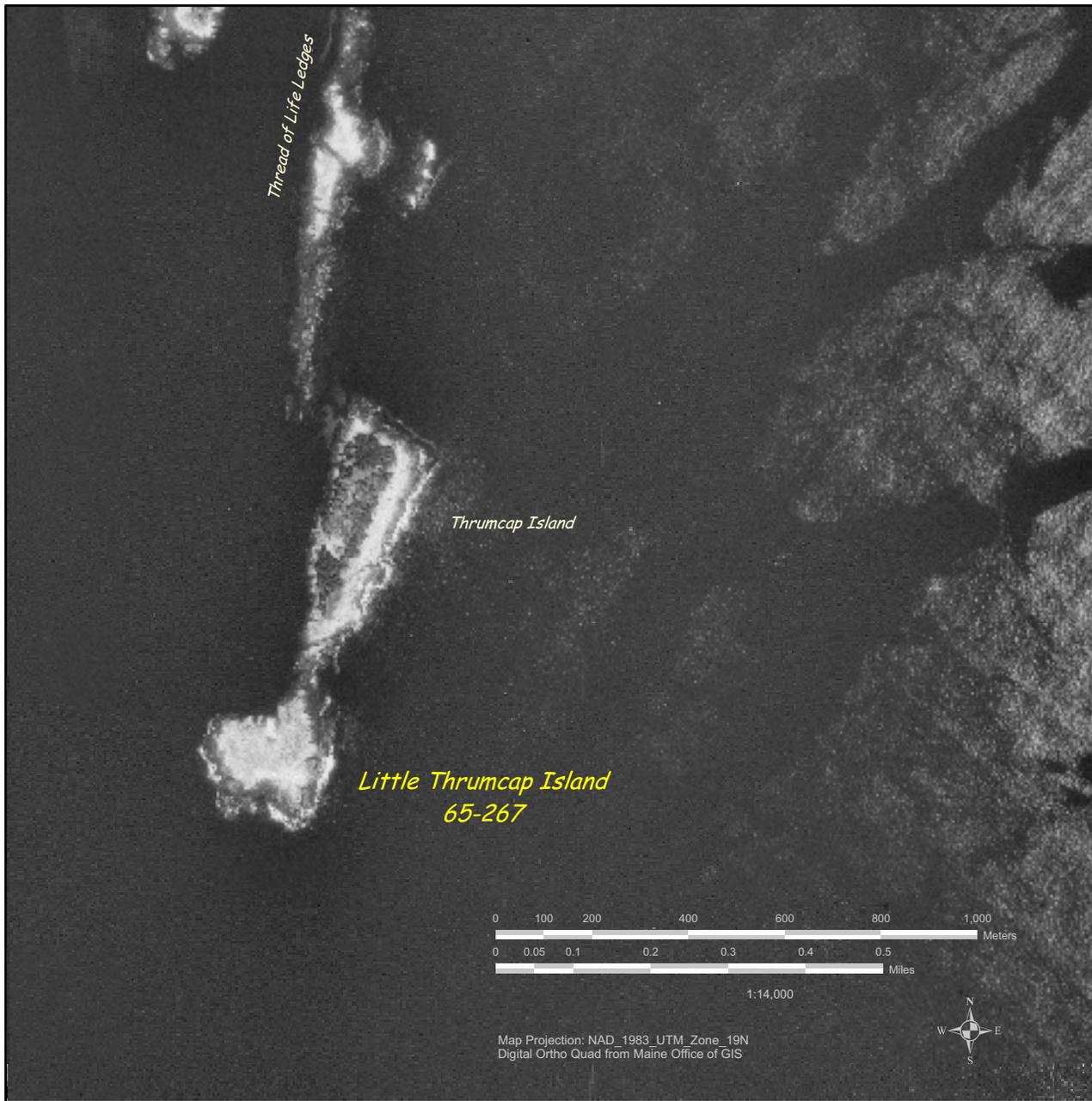
Outer Heron, Inner White and Outer White Islands





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

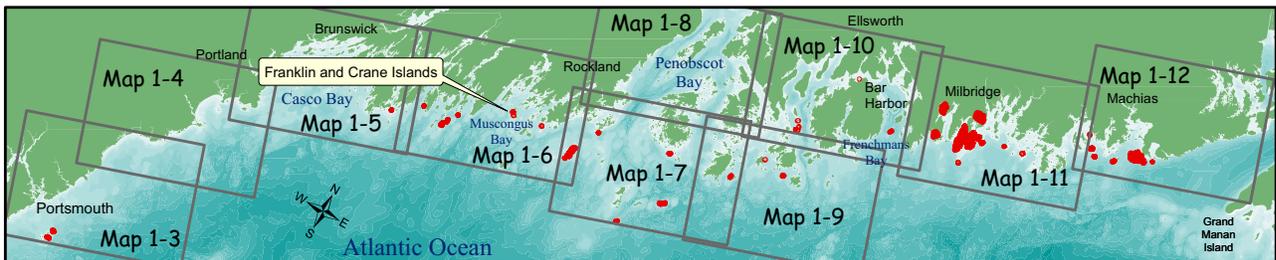
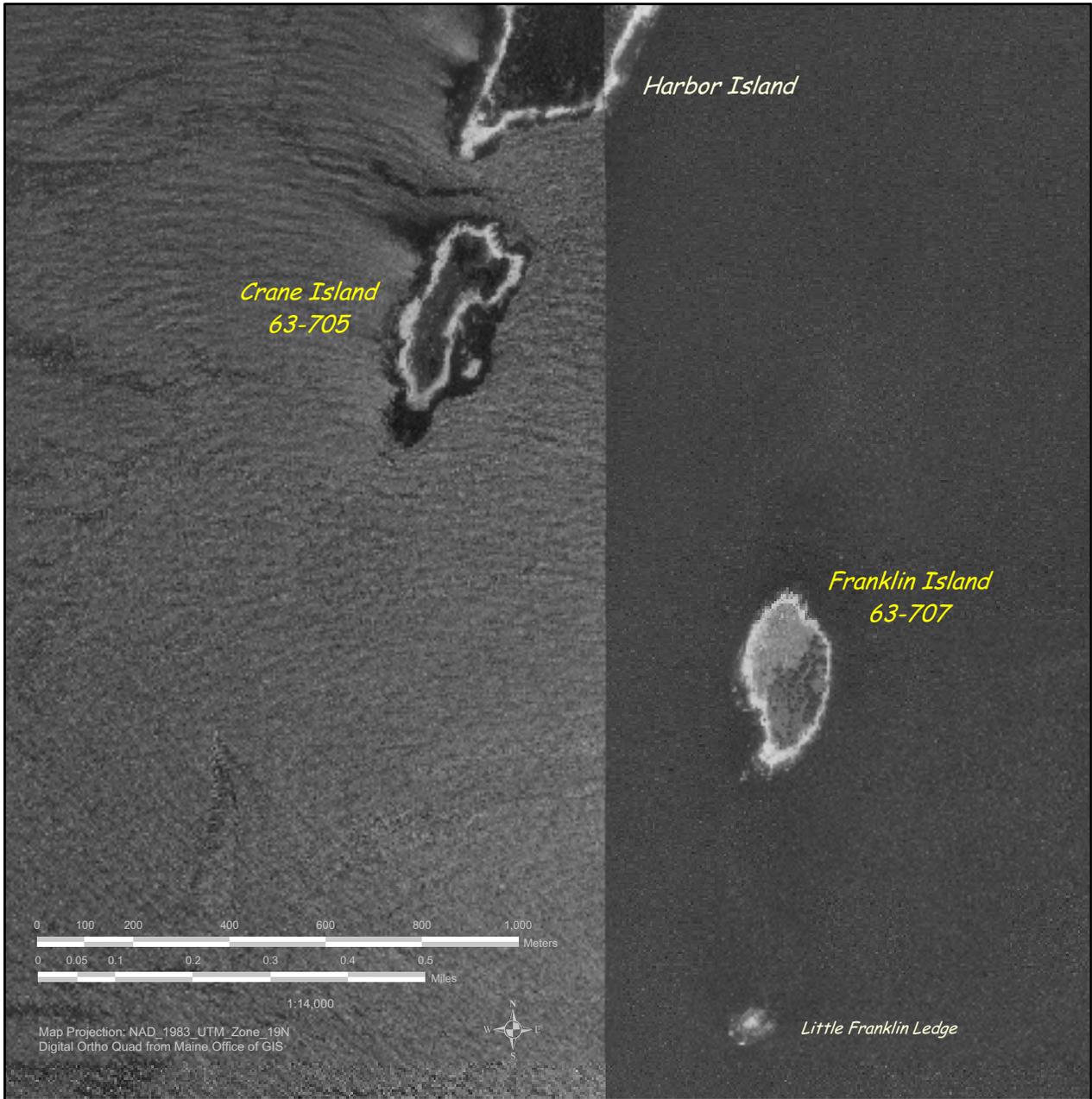
Little Thumcap Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

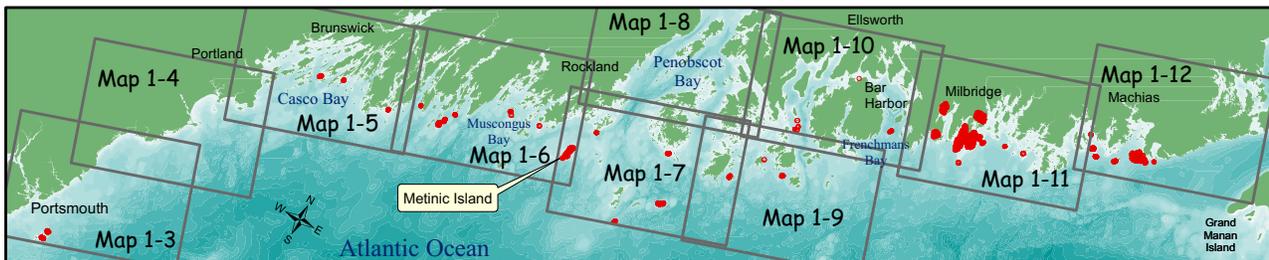
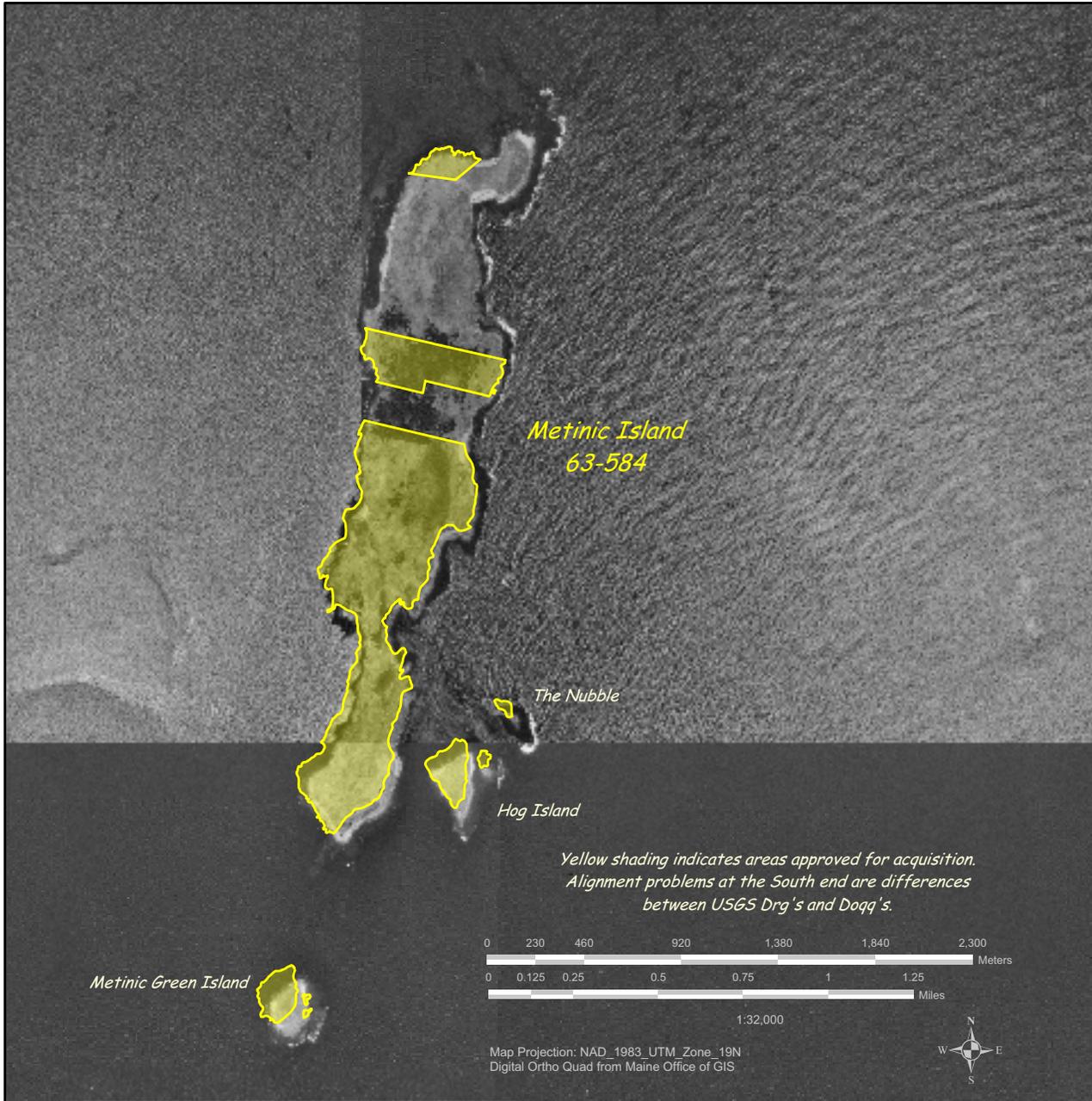
Franklin Island National Wildlife Refuge and Crane Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL ASSESSMENT

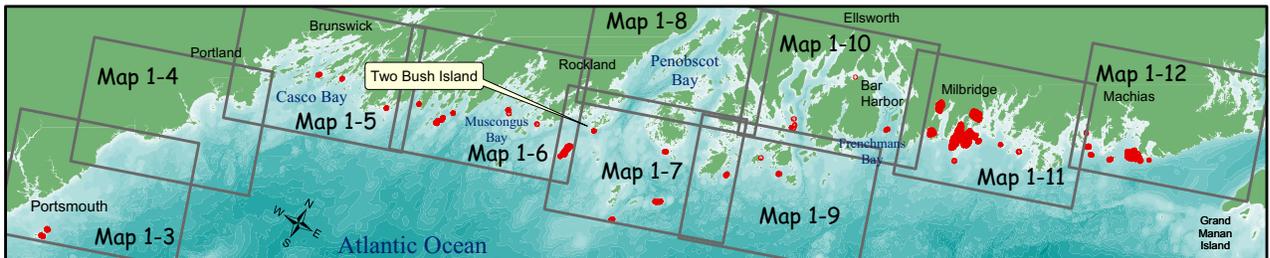
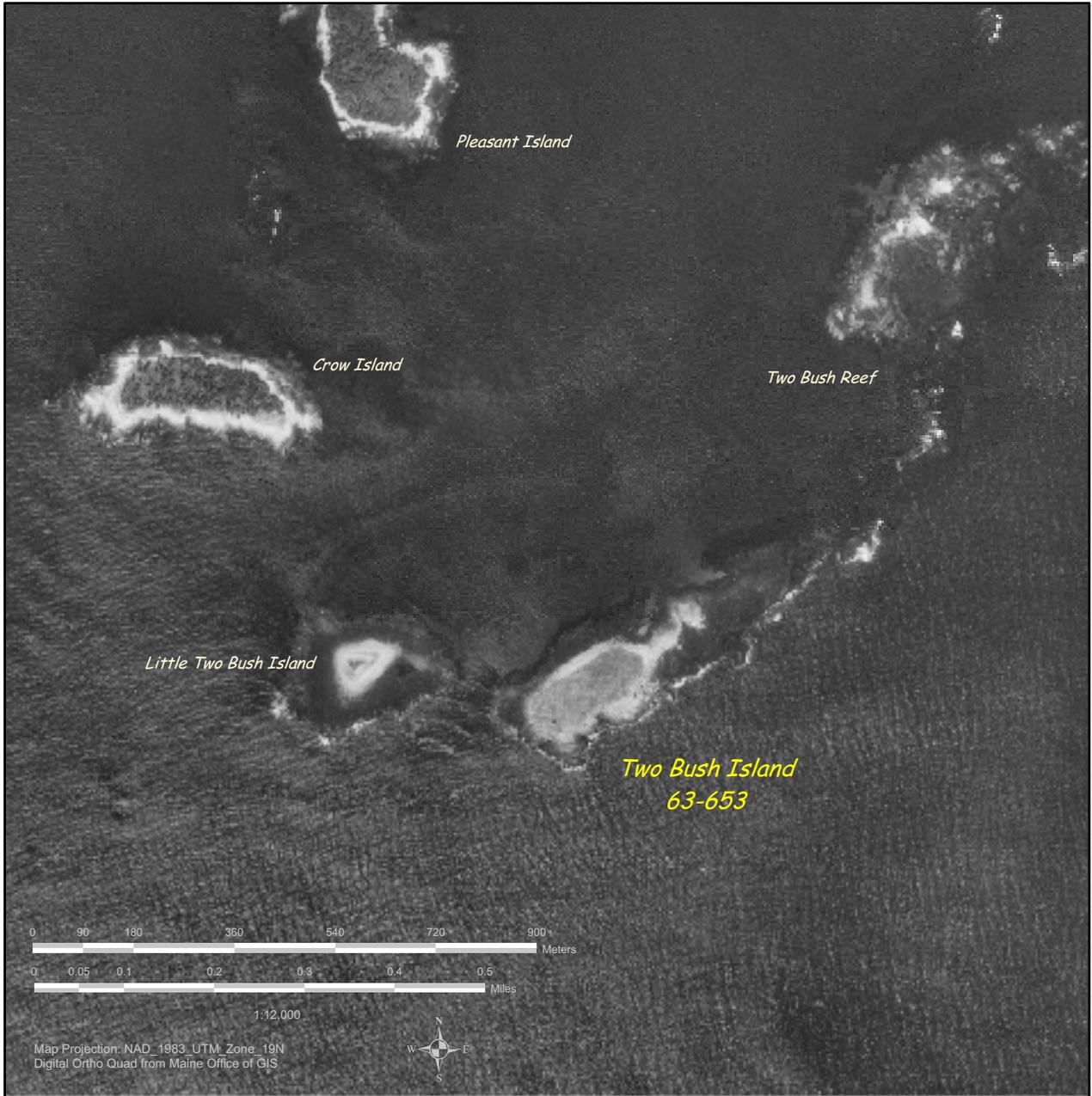
Metinic Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

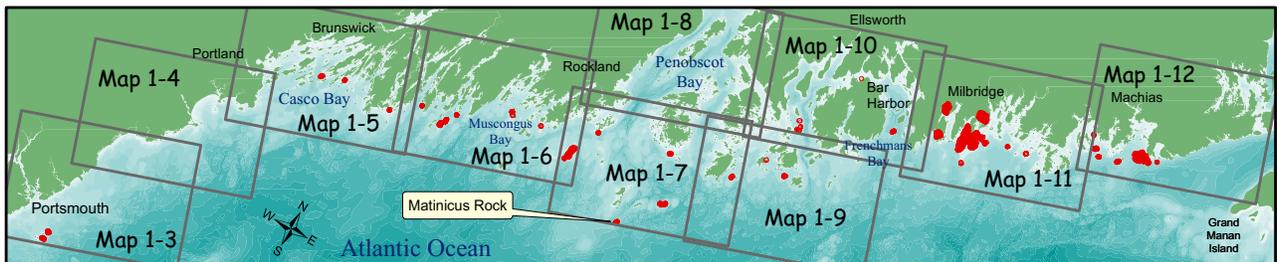
Two Bush Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

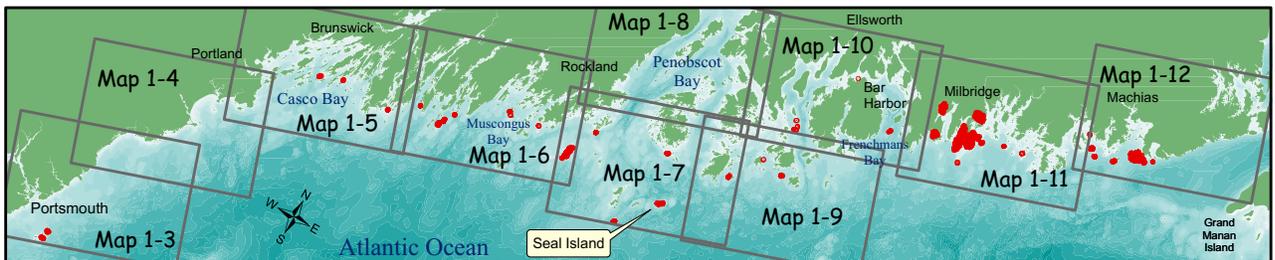
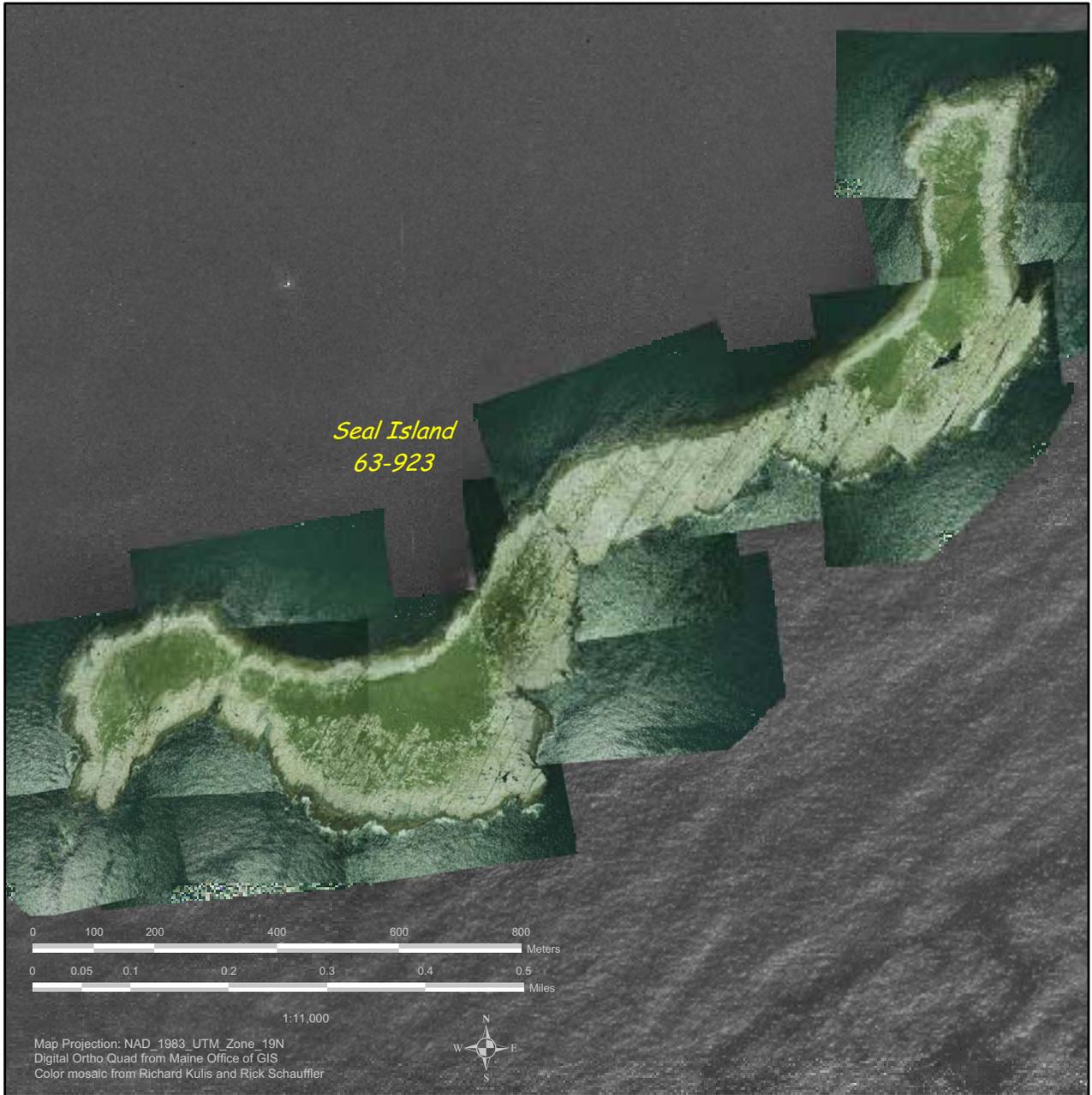
Matinicus Rock





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

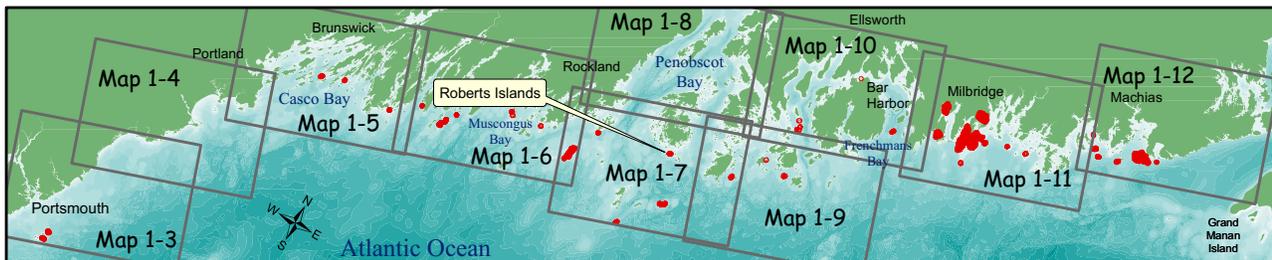
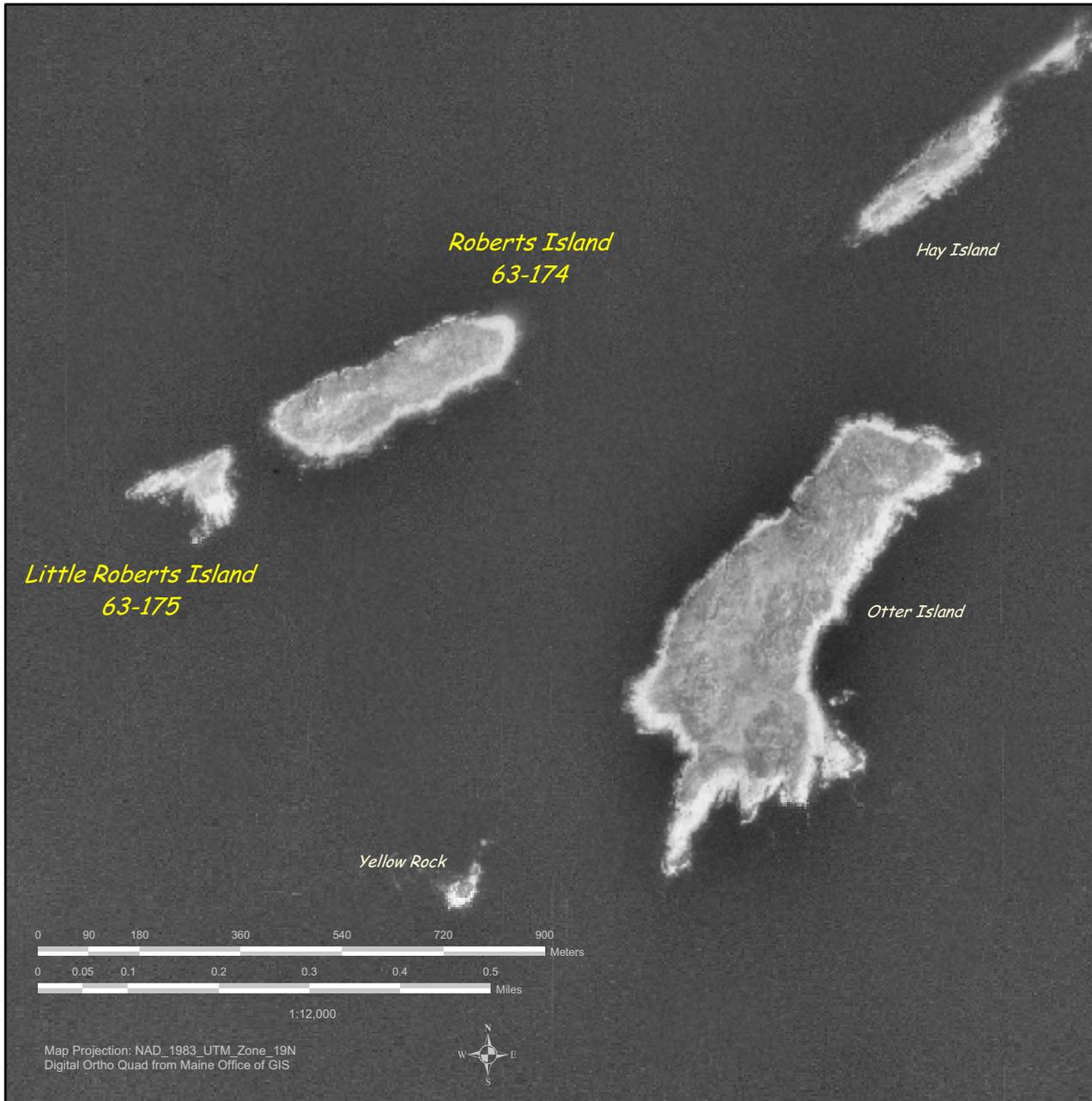
Seal Island National Wildlife Refuge





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

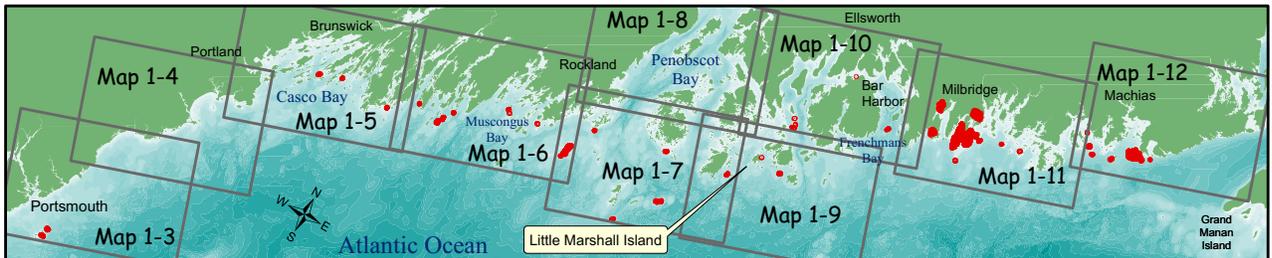
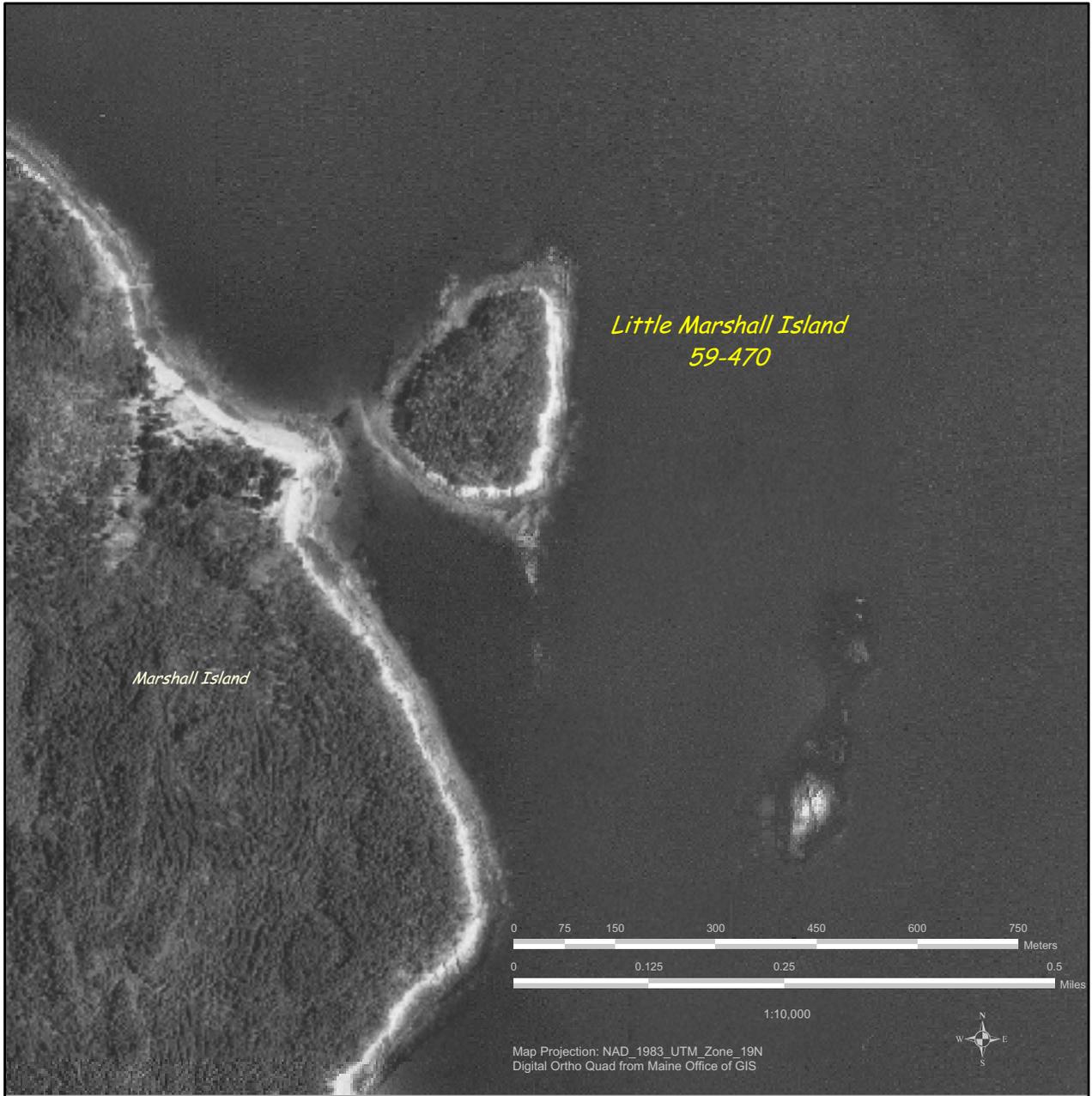
Roberts and Little Roberts Islands





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

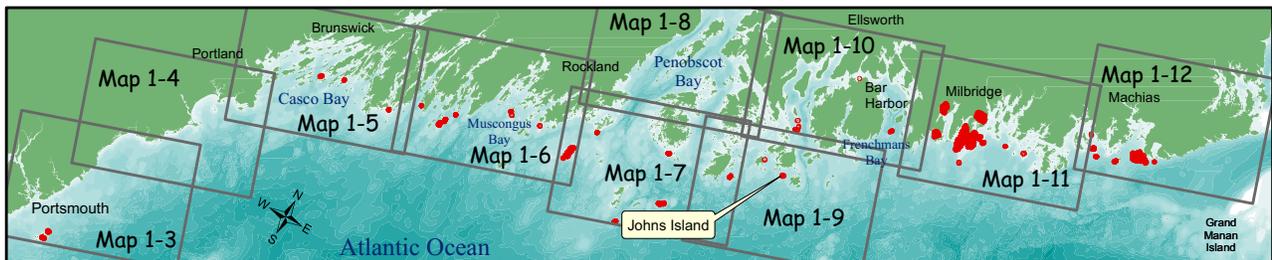
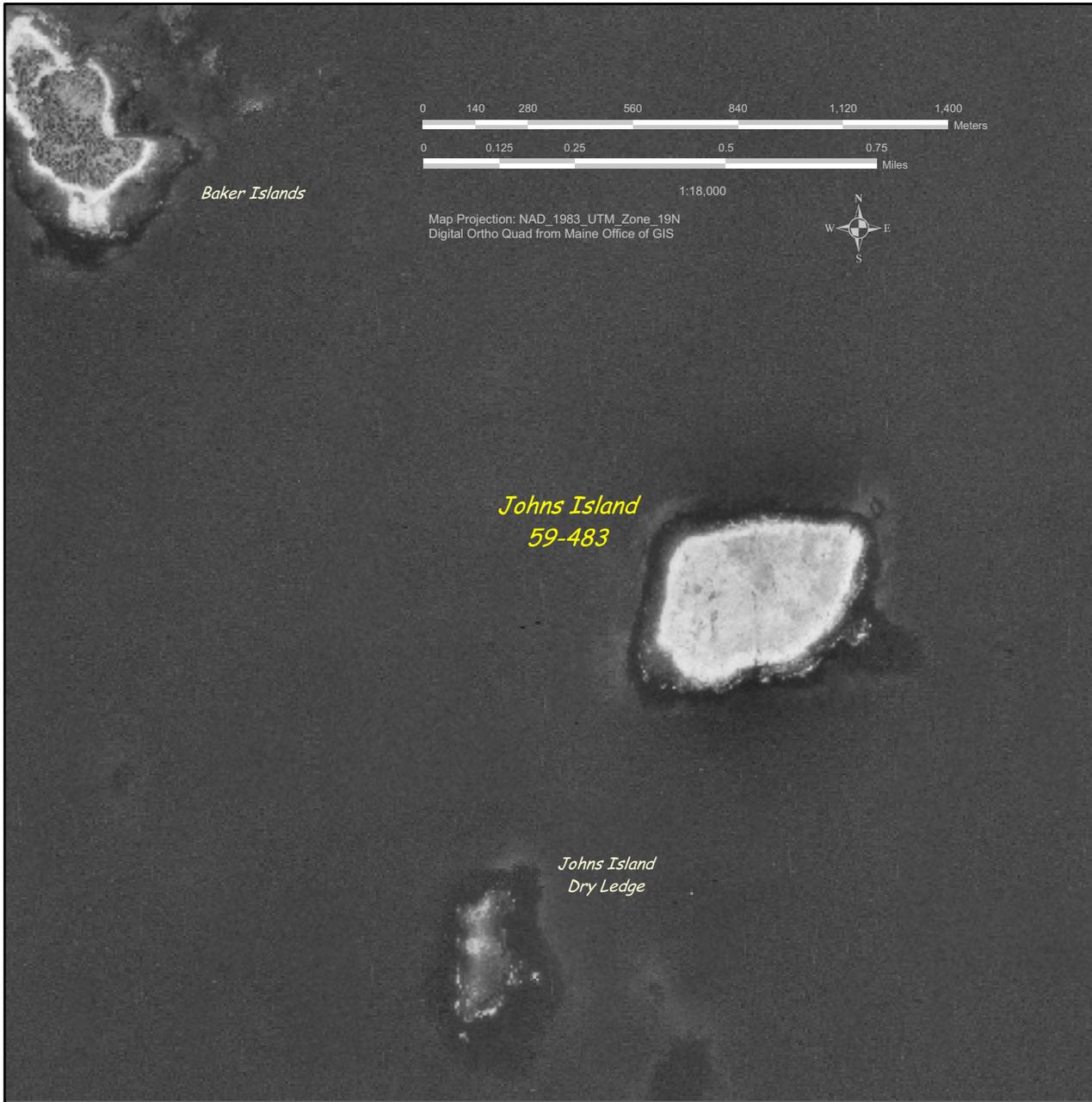
Little Marshall Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

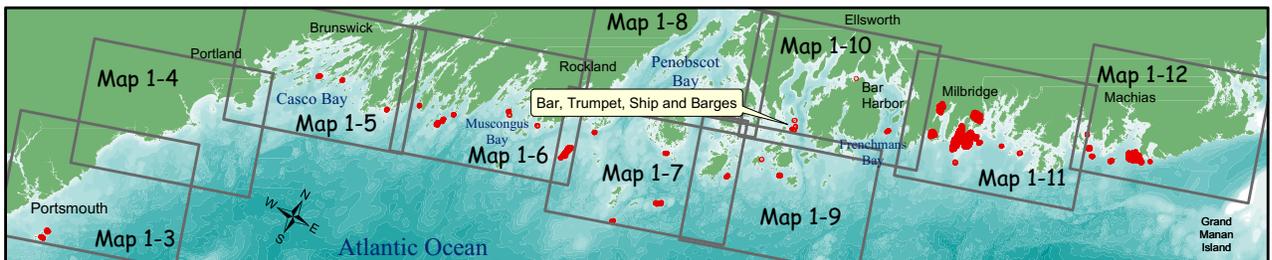
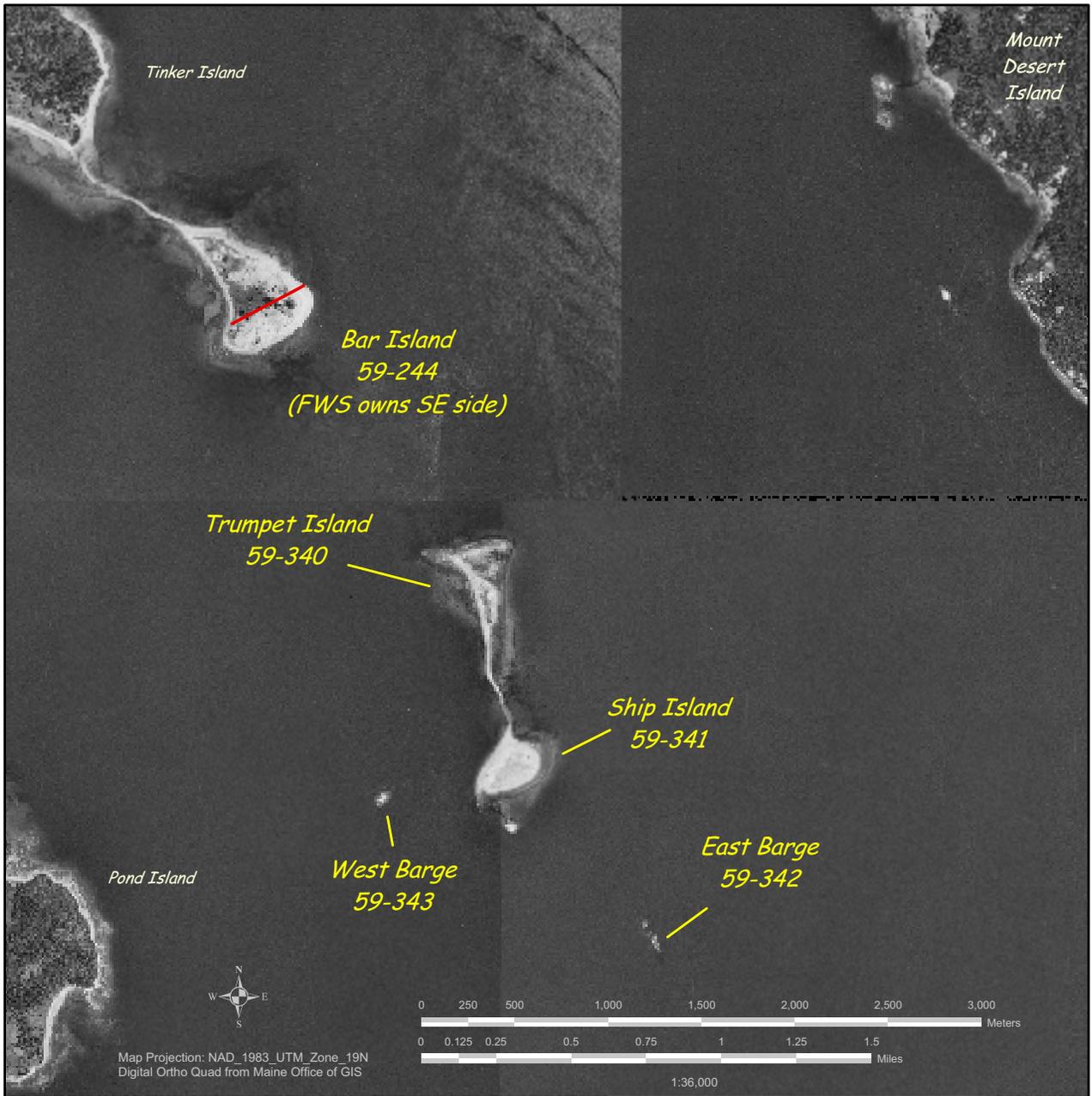
Johns Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

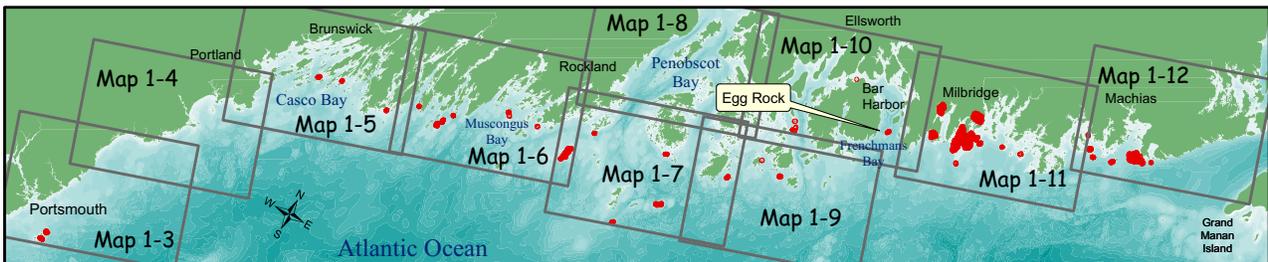
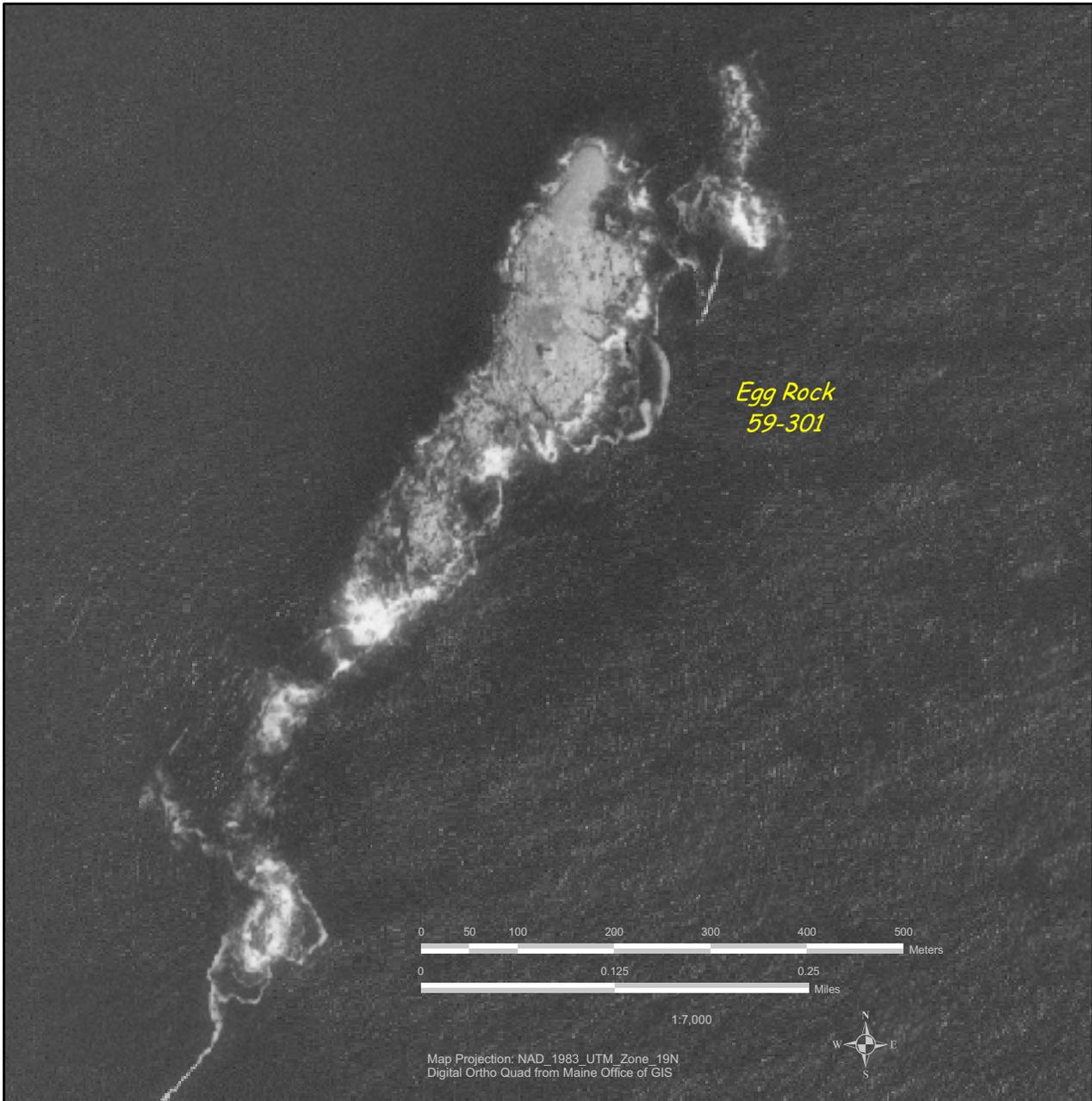
Bar, Ship and Trumpet Islands, East and West Barges





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

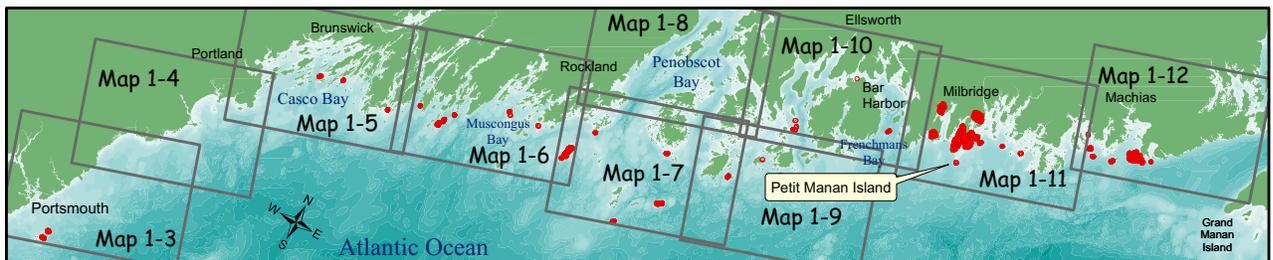
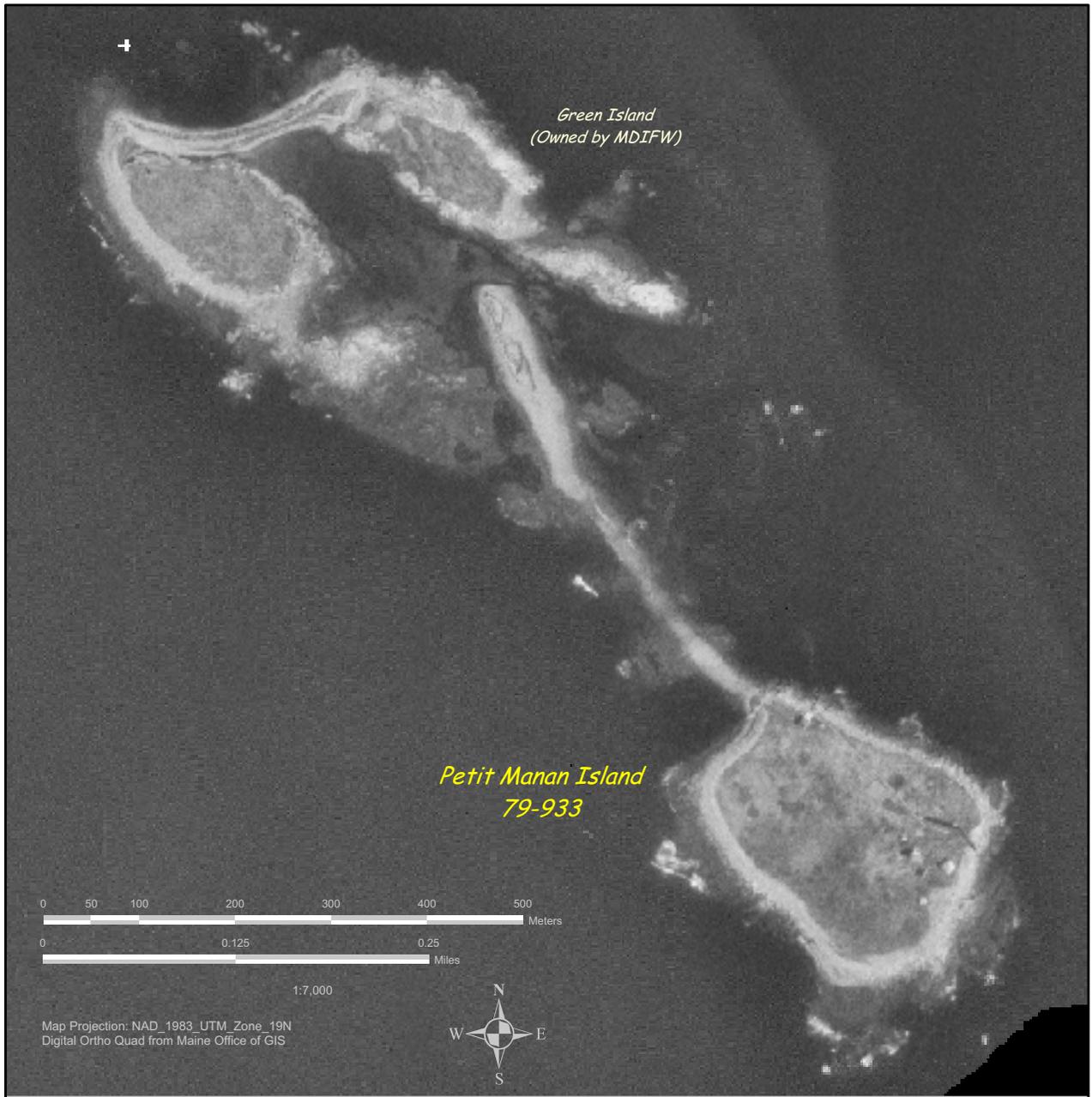
Egg Rock





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

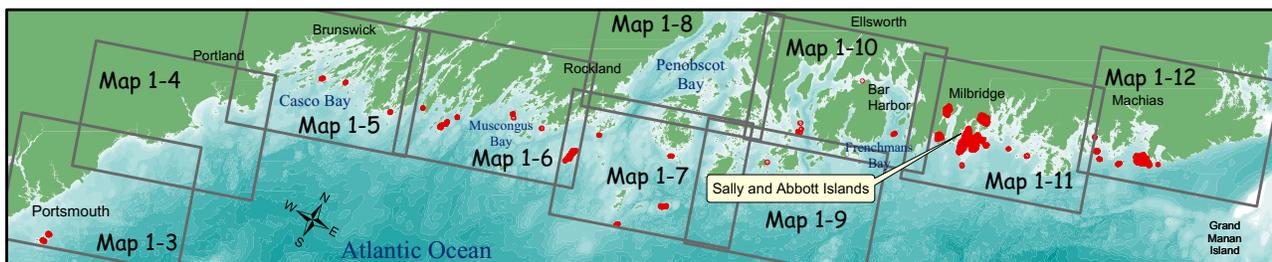
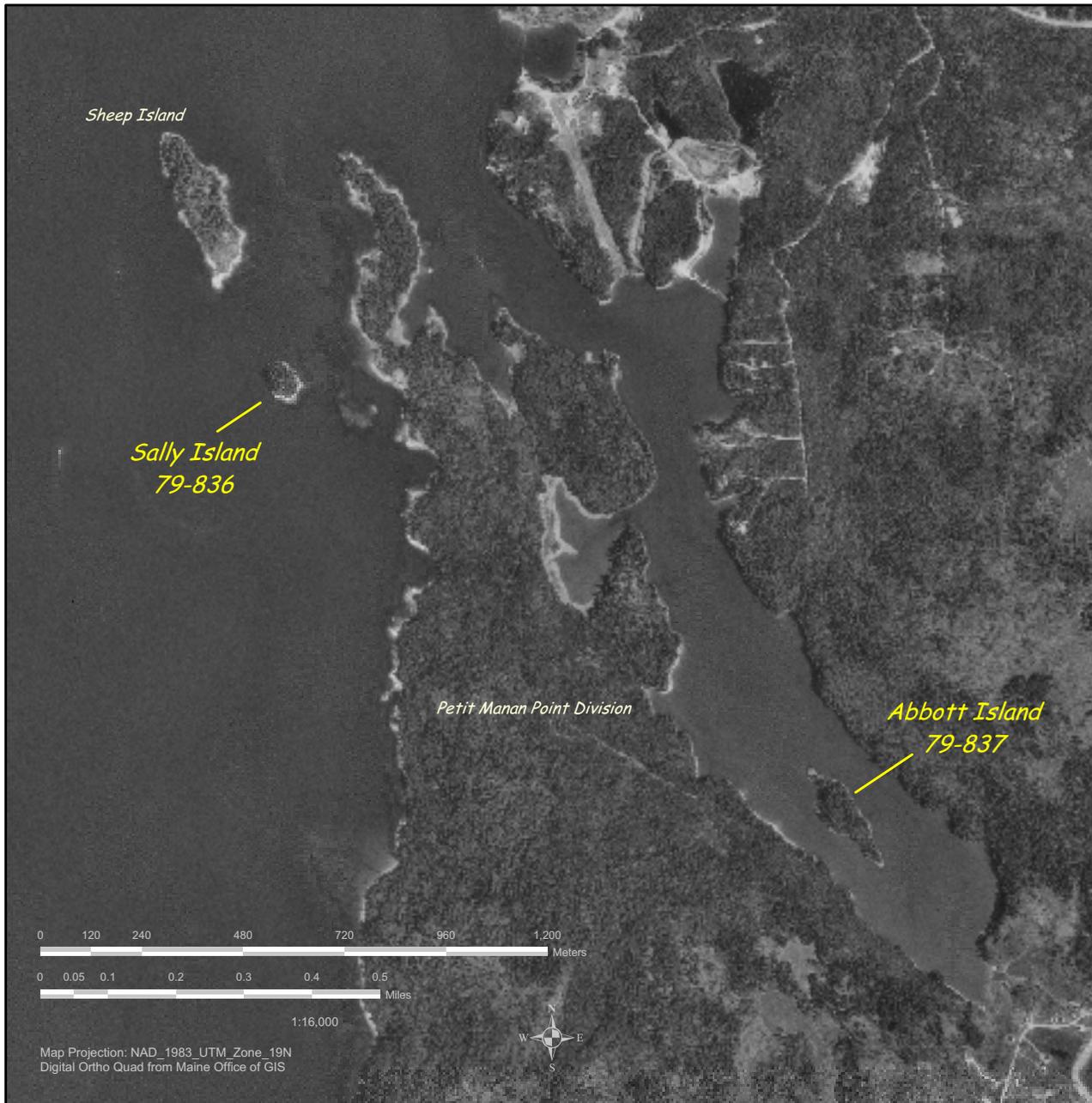
Petit Manan Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

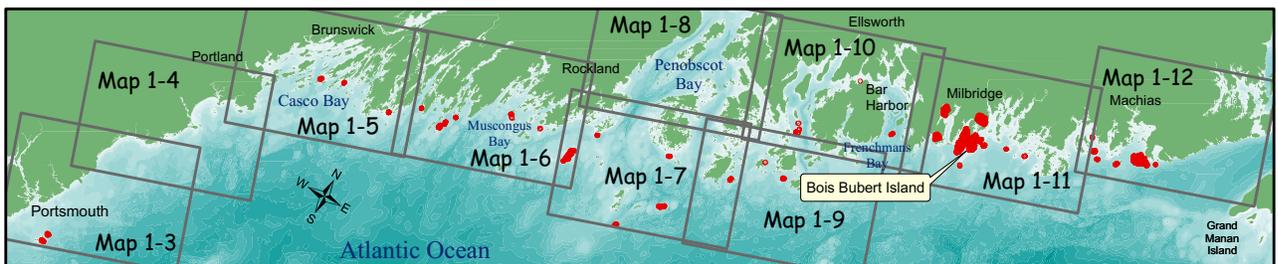
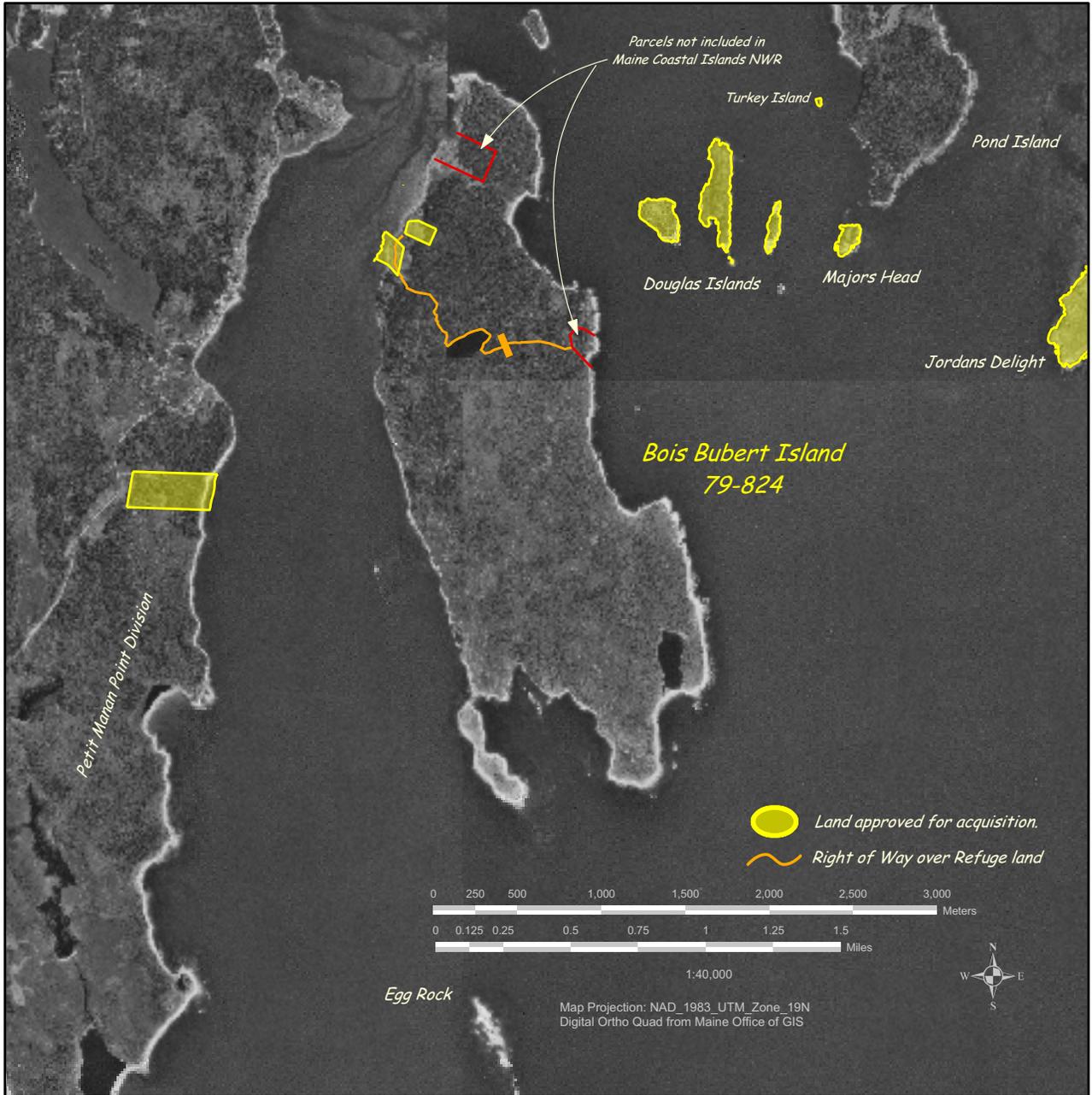
Sally and Abbott Islands





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

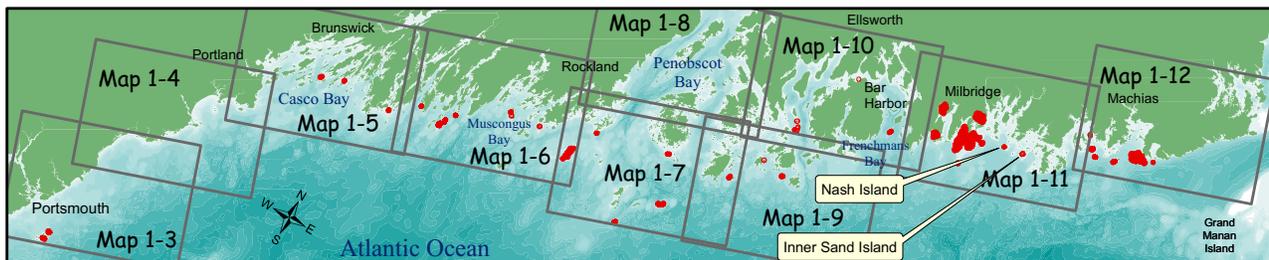
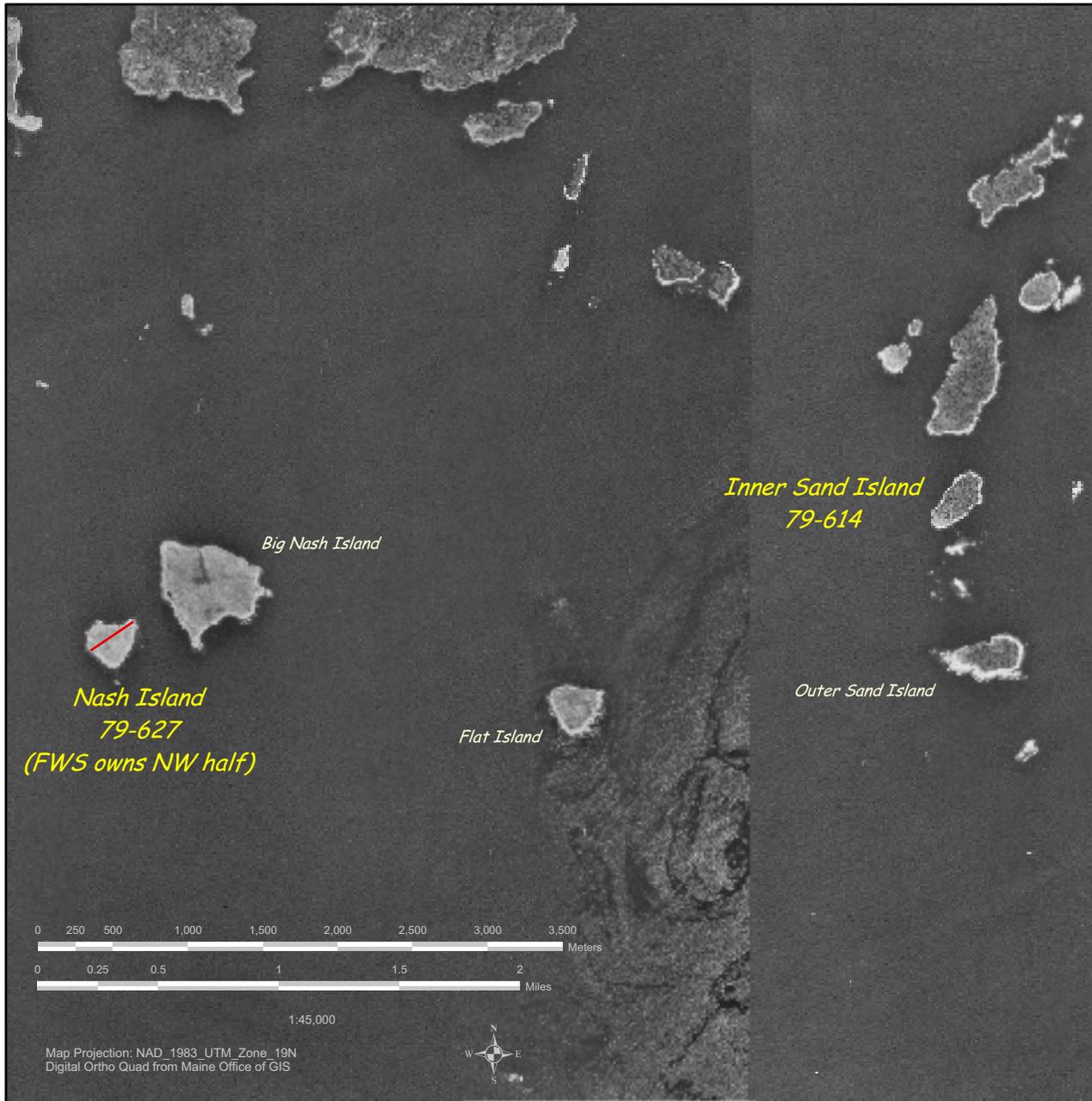
Bois Bubert Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

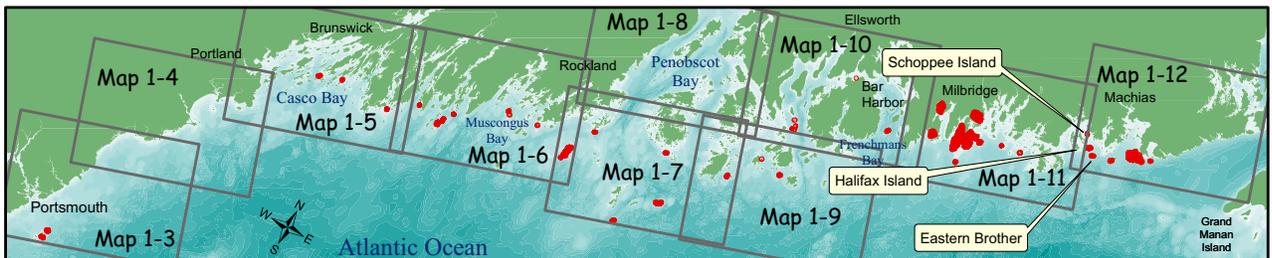
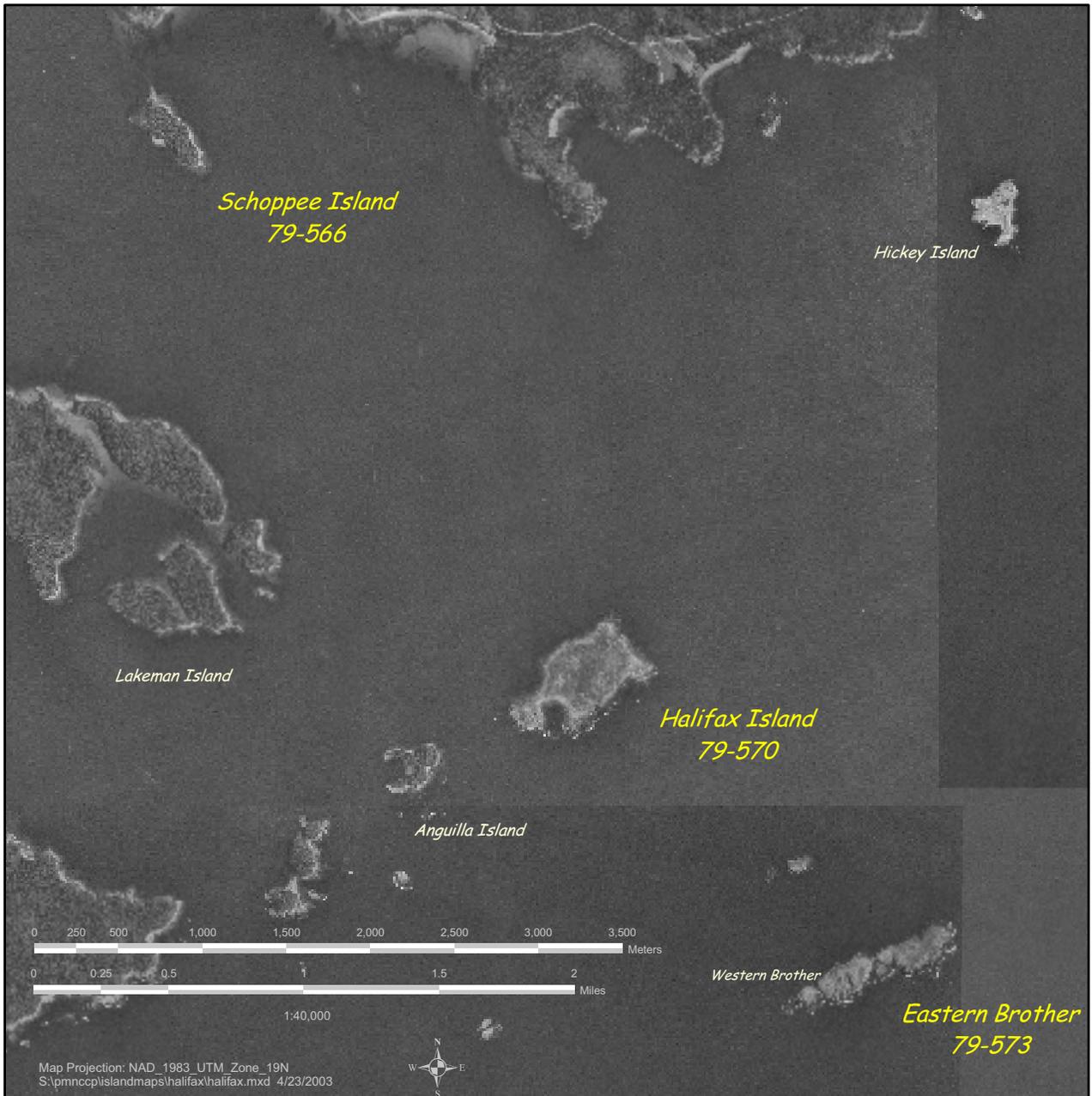
Nash and Inner Sand Islands





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

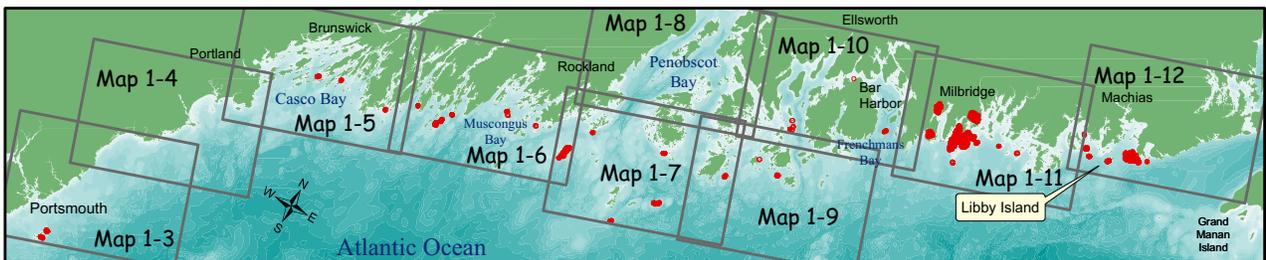
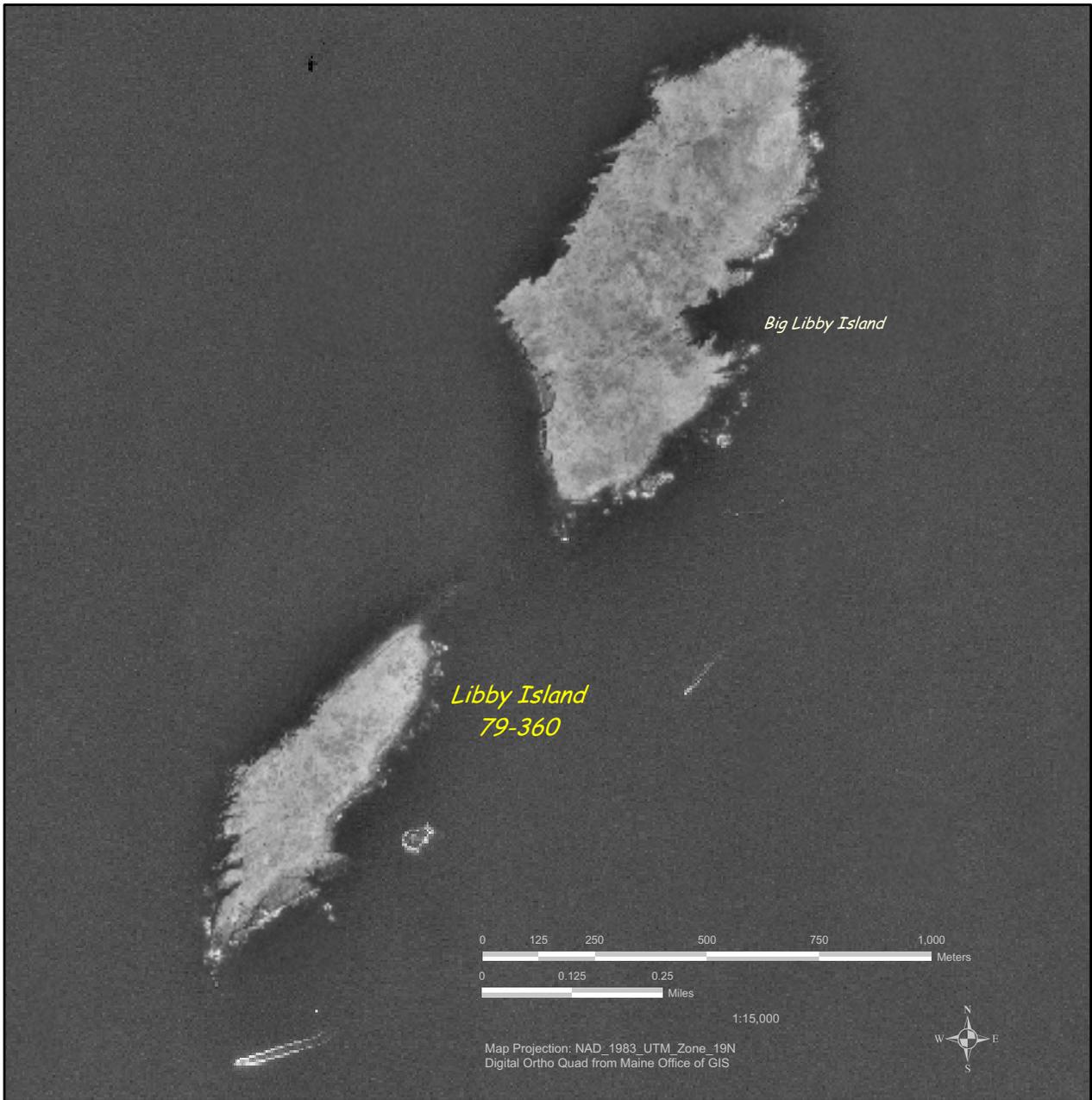
Halifax, Schoppee and Eastern Brothers Islands





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

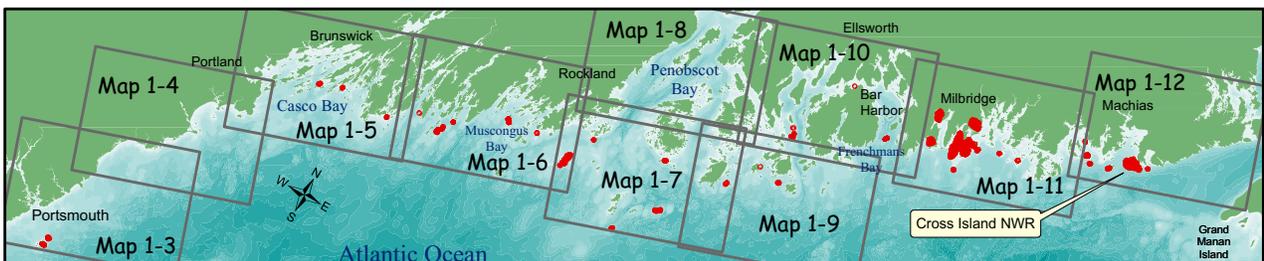
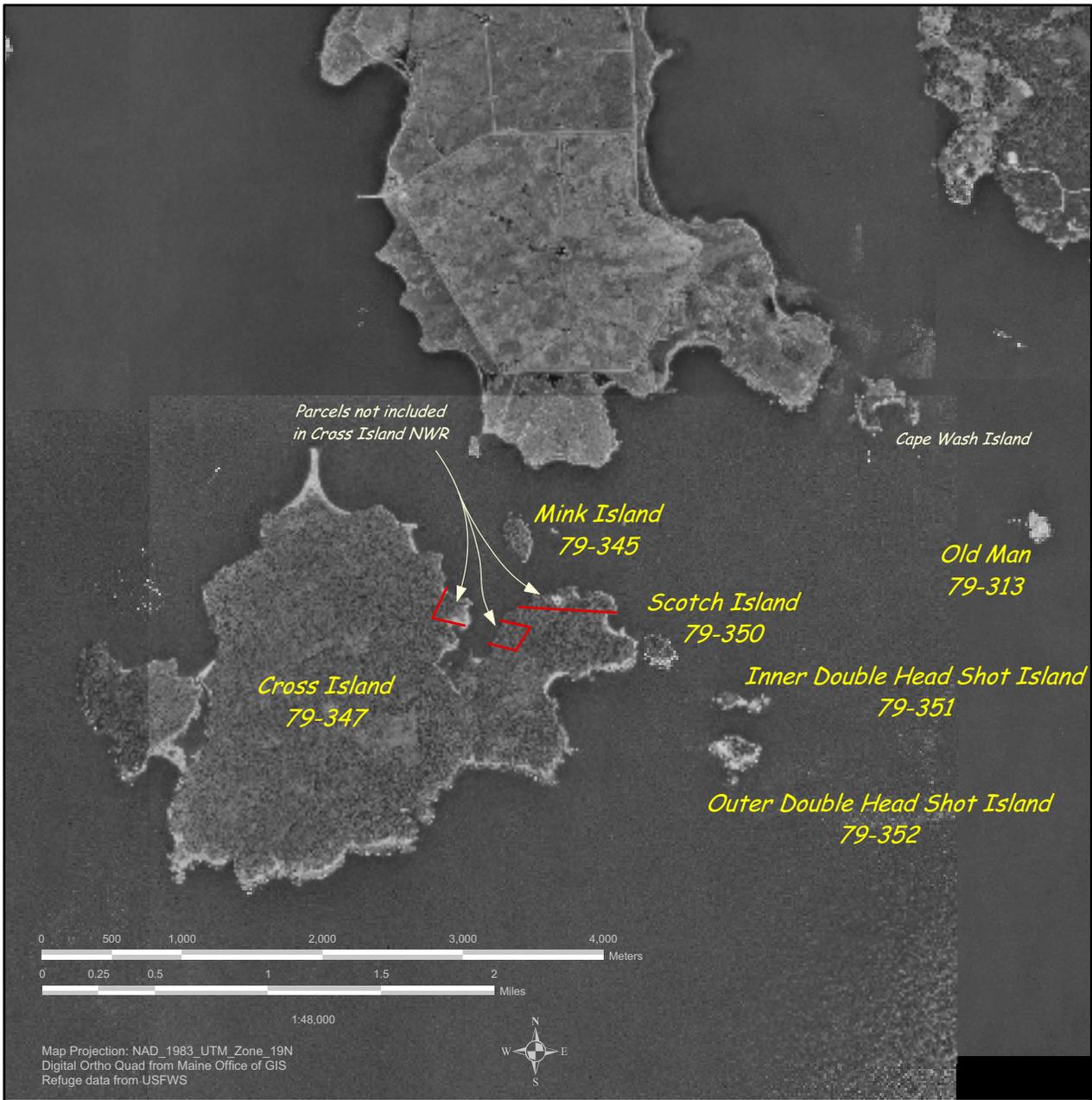
Libby Island





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

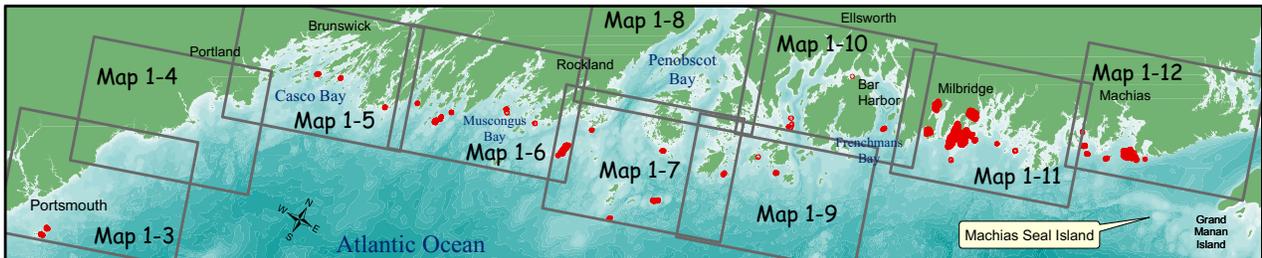
Cross Island National Wildlife Refuge





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Machias Seal Island



Part 3: Refuge Mainland Resources

The Refuge's mainland is composed of three divisions: Petit Manan Point, Gouldsboro Bay, and Saywers Marsh. A fourth division, Corea Heath, is a pending transfer from the U.S. Department of the Navy. All mainland divisions are part of the Petit Manan Refuge. Each one is ecologically diverse, providing habitat for a tremendous variety of resident and migratory species.

A primary management objective on these lands is to protect and restore critical stopover points for Neotropical migratory land birds, waterfowl, and shorebirds during their spring and fall migrations along the Maine coast. In recent years, management emphasis has also been on acquiring private inholdings from willing sellers, conducting baseline biological surveys, and providing high quality interpretive trails. Each of the divisions is described in more detail below.

Table 3-42, at the end of this chapter, presents a summary of cover types for the entire Refuge.

Petit Manan Point Division

Acquisition History

Much of Petit Manan Point was acquired by the Service in 1976 from The Nature Conservancy and William Mague. It consists of 2,195 acres in the Town of Steuben, Washington County. Map 3-26 depicts current Service ownership.

This division has had an interesting and colorful past. At the turn of the century, most of Petit Manan Point was owned by the Maine Coast Club, a company that intended to develop the land for "rusticators." Tennis courts, a golf course, a saltwater swimming impoundment, a deer enclosure, a wharf, and even a casino were built. In addition, portions of the property were subdivided into building lots. However, its expectations were never realized, and the club went bankrupt. Most of Petit Manan Point was eventually acquired by the Mague family, who turned it back into a saltwater farm, using the cleared areas for sheep pasture and blueberry fields. The old club buildings gradually disappeared, and, aside from two old camps and a small chapel, few traces of it remain.

Biological Resources

Petit Manan Point has an uncommon diversity of habitats, including rocky ledges, sphagnum bogs, exposed cobble beaches, blueberry barrens, maritime slope bog, cedar swamp, jack pine stands, red spruce forests with some mixed hardwoods, coastal raised heath peatlands, fresh and saltwater marshes and old hayfields. The Point also includes over 10 miles of shoreline. Some of the more exposed areas have a distinct, rugged and windswept character. A cover-type map using national vegetation classification standards was completed

in 2002. Acres calculated from cover typing are based on GIS and may vary from deed acreage. A summary of cover types by acre is presented in Table 3-38 below; Map 3-27 portrays the cover types on the landscape.

Table 3-38 Petit Manan Point Division cover types by acres

Cover Type	Acres (GIS)	Percent (%) of Area
Mature conifer forest	905	41
Northern hardwood -mixed forest	453	21
Early successional forest	226	10
Open field	70	3
Jack pine woodland	11	0.5
Freshwater wetlands	219	10
Maritime saltmarsh & estuary	8	0.4
Saltwater tidal / aquatic bed	302	14
Building / camp	1	0.1
Total	2,195	100

Several rare plants and community types have been documented on Petit Manan Point. The State-listed plants include: Nova Scotia false-foxglove (*Agalinis neoscotica*), Pickering's reed bent-grass (*Calamagrostis pickeringii*), salt-marsh sedge (*Carex recta*), swarthy sedge (*Carex adjusta*), and moonwort (*Botrychium lunaria*) (Widrig 1996). The rare or noteworthy community types include: maritime slope bog, tall meadow, Larch forest, maritime spruce-fir, jack pine, spruce-fir flats, spruce woodland, northern white cedar swamp, and spruce slope forest (MNAP 2002).

Petit Manan Point is noted for its use by migrating waterfowl, songbirds, shorebirds, and raptors. Annual breeding bird surveys are ongoing, including, marsh bird, grassland bird, woodcock, and land bird. A variety of land bird species of concern (Appendix B) have documented breeding on the refuge, include American woodcock, eastern wood-pewee, chestnut-sided warbler, and bobolink. We have participated in the Monitoring Avian Productivity and Survivorship (MAPS) program for five years on Petit

Manan Point. The emphasis of this program is to measure demographic parameters such as migratory landbird survival and productivity rates at over 500 MAPS stations continent-wide. This data will be pooled to help evaluate what and where population fluctuations are occurring for captured species. This MAPS station is one of the top 5% in terms of productivity of stations in North America, excluding Alaska. On the average, 337 birds are captured each year, representing 43 species (Brokaw and Burke 1997, Taylor and Famous 2000). Common warbler species captured include magnolia, black-and-white, black-throated green, and Nashville warbler. Other common species include American redstart,



Bobolink
USFWS photo

white-throated sparrow, hermit and Swainson's thrush, and common yellowthroat. Bird and plants species checklists are available from the Refuge Headquarters upon request.

The three impoundments on Petit Manan Point are used extensively by migratory waterfowl; it is common to observe over 4,000 ducks during fall migration in the area. These three freshwater wetlands cover 219 acres, and are managed to provide habitat for fall migratory waterfowl, shorebirds, and wading birds. The most abundant species observed are American black duck, mallard, and green-wing teal. We have been trying to increase wild rice production in one of the impoundments to provide high quality waterfowl forage.

Current upland habitat management activities include mowing and prescribed burning as means of maintaining open fields. Use of fire to manage open habitats has an historic and cultural context in this part of Maine.

Blueberries, a chief export product for Maine, are managed using prescribed fire. In spring, burning is commonplace in Washington County, with more than 10,000 acres of blueberry lands burned each year. Prior to acquisition, Refuge lands on the Point were burned to maintain blueberry fields.

Approximately 65 acres of these same fields are scheduled for burning in the approved Fire Management Plan every 3 to 5 years, laid out in 11

separate burn units. The objective is to maintain blueberry and grass fields for forage and nesting bird habitat. Invasive sweetfern and other woody vegetation will be controlled by burning. We burn during the spring (April-May) or fall (September-November), as conditions permit and outside the upland bird nesting season. Because of the narrow burn window, precipitation levels, and the humid coastal climate, burning has not always been accomplished. Other limitations, like inadequate fuel in blueberry fields, may limit fire's effectiveness in some areas. During years when burning is not feasible, we use mowing to accomplish vegetation management.



Northern pintail ducks
USFWS photo

Efforts to inventory invertebrates on Petit Manan Point have recently been initiated. A refuge volunteer is currently conducting dragonfly and damselfly surveys (Hildreth 2001 and Hildreth 2002). At this point in time, 33 species of Odonates have been documented on the refuge, several of which are considered rare or special concern in Maine. We have also recently initiated extensive survey efforts for spiders. To date, 178 species have been documented on the refuge, including several new records for the state of Maine, and several previously undescribed species (Jennings 2000, Jennings 2001,

and Jennings 2002). Efforts to document presence and abundance of amphibians and vernal pools on Petit Manan Point will continue.

Public Use

A seasonal biological technician was hired between 2000 - 2002 to work on the Point to conduct baseline wildlife and habitat surveys, monitor public use, and conduct outreach with Refuge visitors. Current public use estimates are approximately 15,000 visitors per year.

The Point has two hiking trails, the John Hollingsworth Memorial and Birch Point trails. There is a parking lot at each trailhead; the Hollingsworth trailhead has approximately 6 spaces, and the Birch Point trailhead has approximately 15 spaces. The Hollingsworth trail is self-guided with interpretive panels. A visitor information kiosk is located at the Birch Point Trail head. Interpretive programs are occasionally given by Refuge staff and volunteers on both trails. Teacher-led environmental programs take place on these trails as well.

In addition to the trail use, roadside blueberry picking, by hand for personal use, is popular in the fall.

The Division has not previously been open to hunting, but with approval of the CCP, a new hunting program is established consistent with the details in Chapter 4, Objective 6.4 (Hunting).

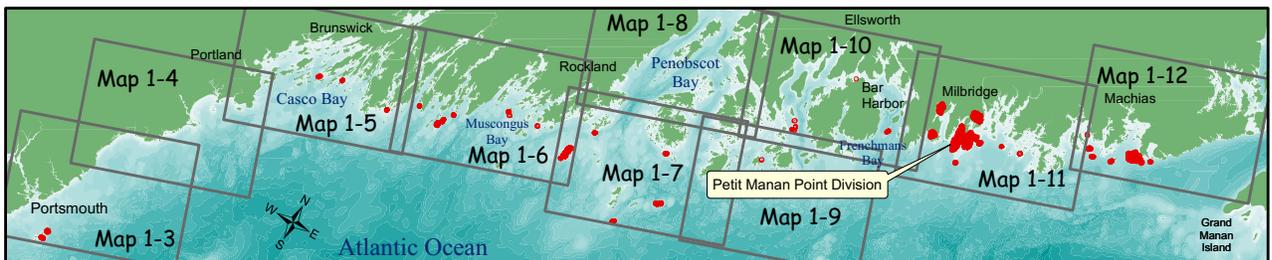
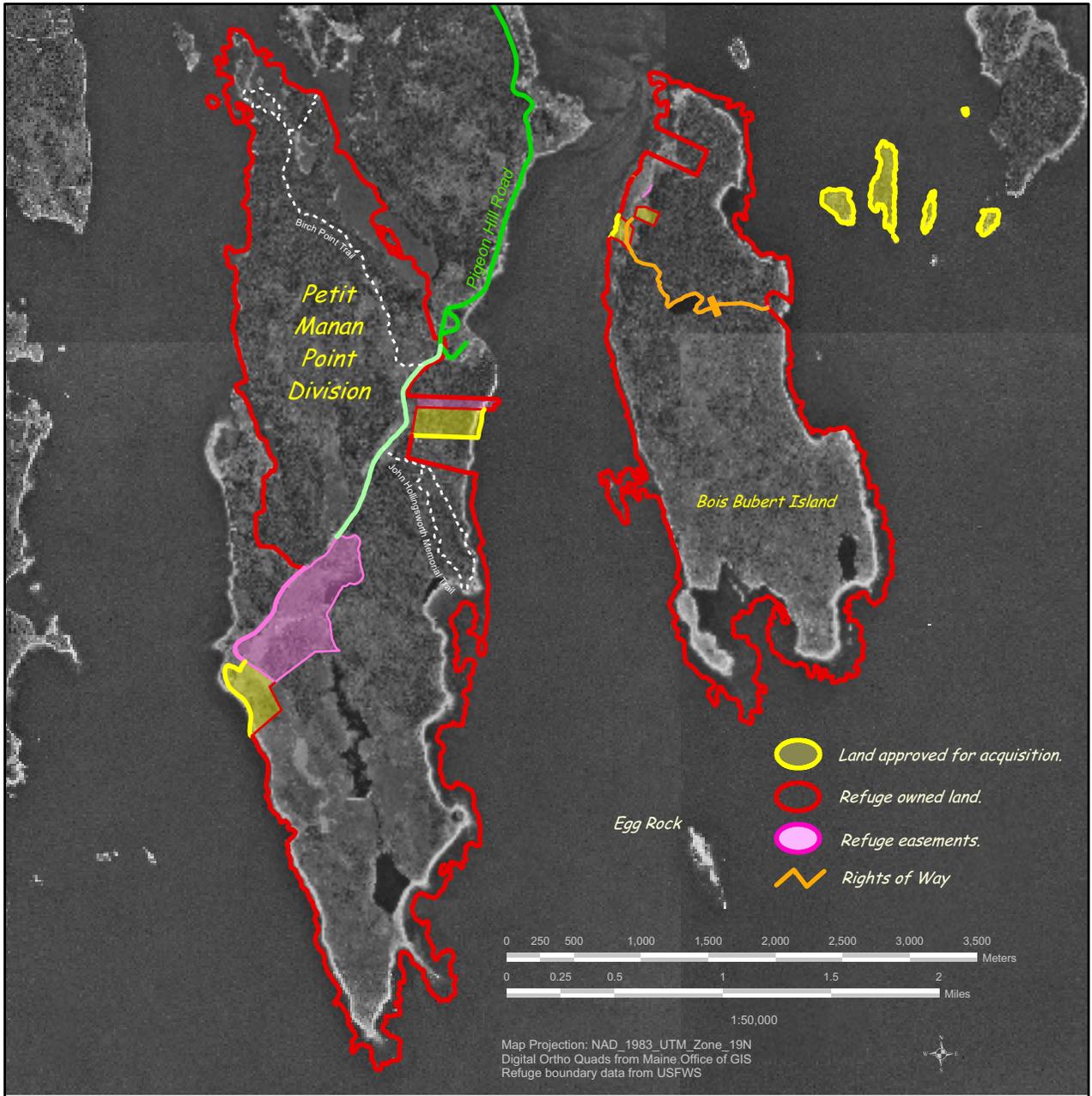


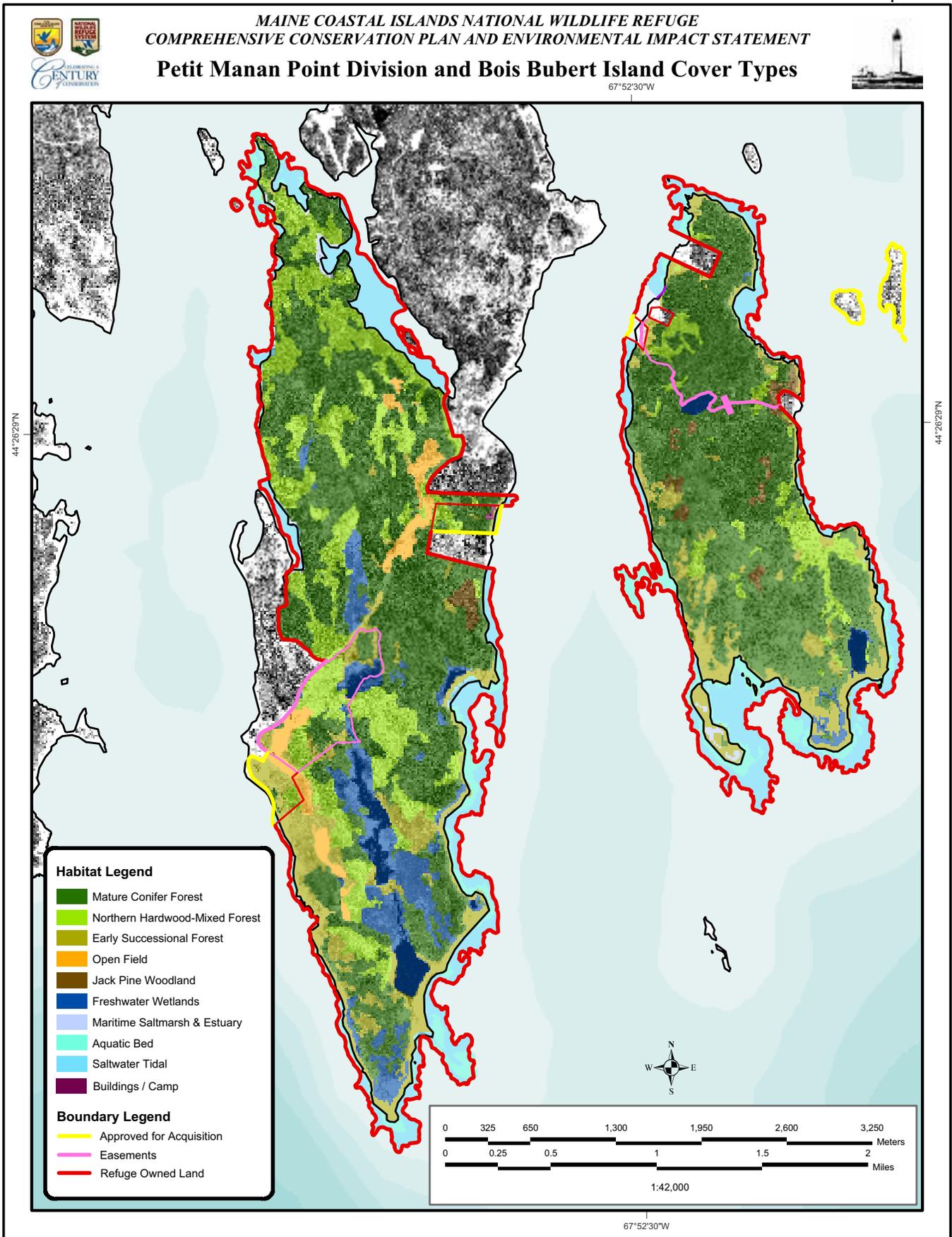
Semipalmated sandpipers
Photo by Craig Snapp



MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Petit Manan Point Division and Bois Bubert Island





Gouldsboro Bay Division

Acquisition History

The Gouldsboro Bay Division is a 607 acre parcel in the Town of Gouldsboro, Hancock County. It was acquired in 1994 and 1995 by donation and sale from a private landowner. Additional tracts were acquired in 1998 and 2000. Map 3-28 depicts current Service ownership. Historically, the division was once the site of the Gouldsboro Town center and the surrounding lands were dotted with farms. The town buildings and farms gradually disappeared and, aside from several old foundations, stone walls and apple trees scattered about, few traces remain.

Biological Resources

A national vegetation classification standards cover type map was completed in 2002. A summary of habitat cover types by acre is presented in Table 3-39 below; Map 3-29 portrays the cover types on the landscape.

Forest stand age varies throughout the division as limited cutting occurred on the property prior to Service acquisition.

Annual breeding bird surveys are ongoing, including land bird, marsh bird, and bald eagle. This division also has a MAPS station that has been monitored for the past three years. This station includes 337 bird captures per year, including 43 different species (Brokaw and Burke 1997, Taylor and Famous 2000). The common bird species are the same as those mentioned for Petit Manan Point. Bald eagles were first observed breeding on Gouldsboro Bay Division in 2001, and the nest site was again active in 2002. Efforts to document presence and abundance of amphibians and vernal pools on Gouldsboro Bay Division will continue.



Canada geese with goslings
USFWS photo

Table 3-39 Gouldsboro Bay Division habitat cover types by acres

Cover Type	Acres (GIS)	Percent (%) of Area
Mature conifer forest	253	41.6
Northern hardwood -mixed forest	123	20
Early successional forest	5	0.8
Maritime saltmarsh & estuary	28	4.6
Saltwater tidal / aquatic bed	198	33
Total	607	100

Public Use

A hiking trail to the saltmarsh, an overlook, and interpretation of an historical site are in the developmental stage. Unfortunately, there is illegal use of all-terrain vehicles (ATVs) to access the saltmarsh. Signs are in place to alert ATV users that all-terrain vehicles are not allowed on the refuge.

This division is open to hunting migratory gamebirds and waterfowl, and small and big game under State and Refuge regulations.

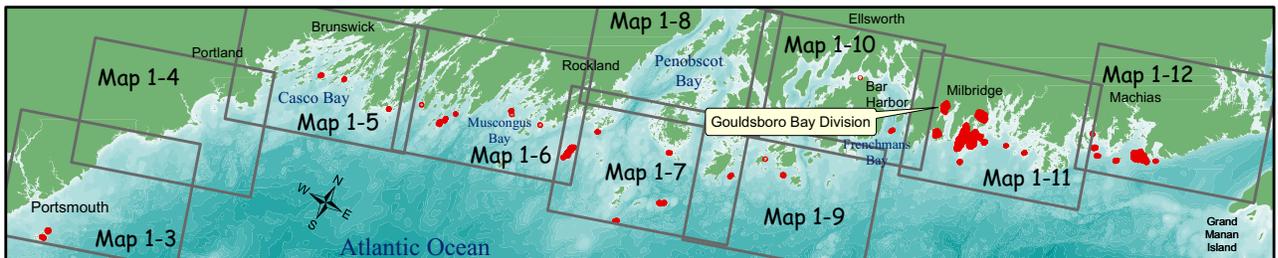
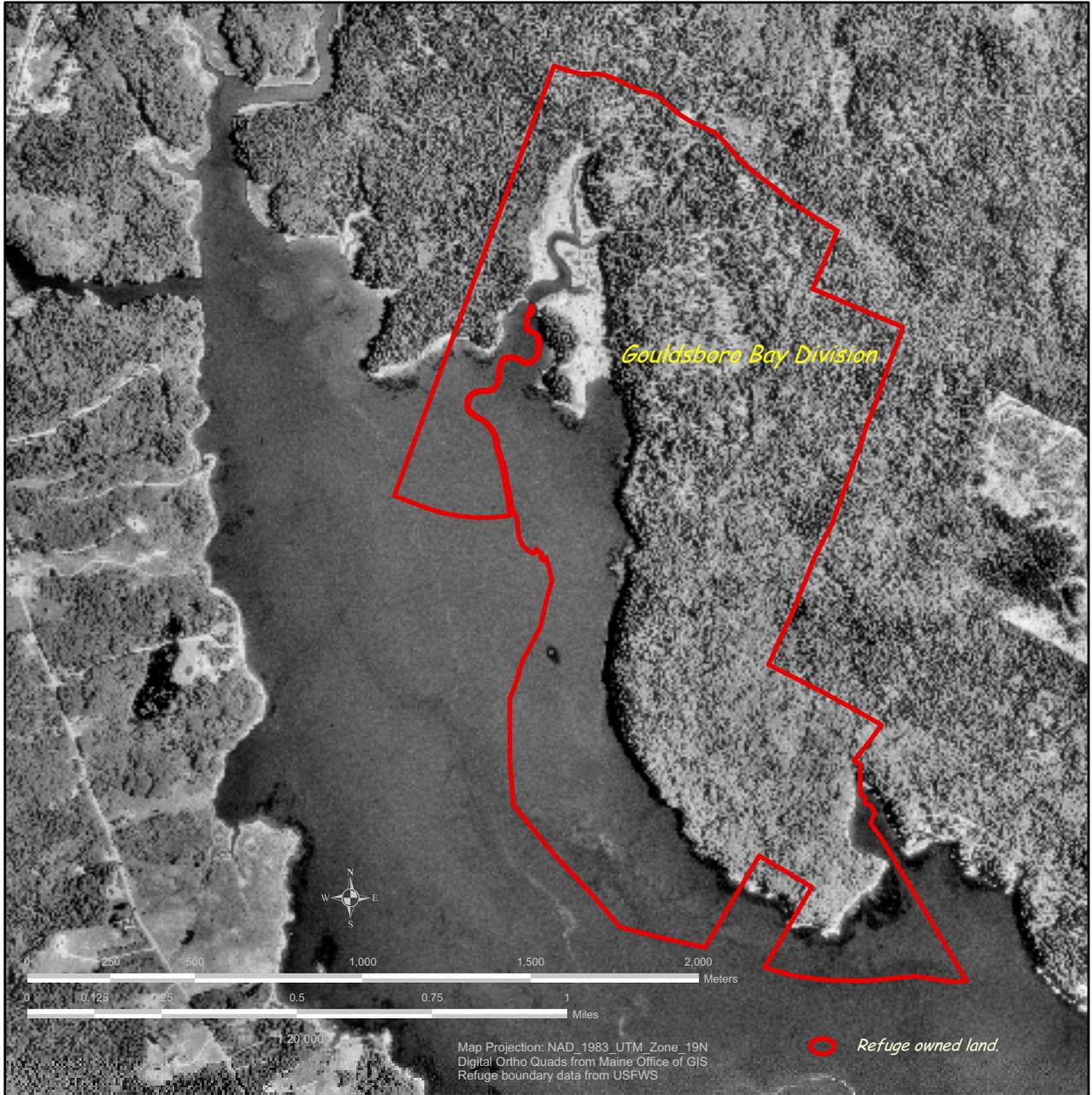


Green frog
USFWS photo



MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Gouldsboro Bay Division

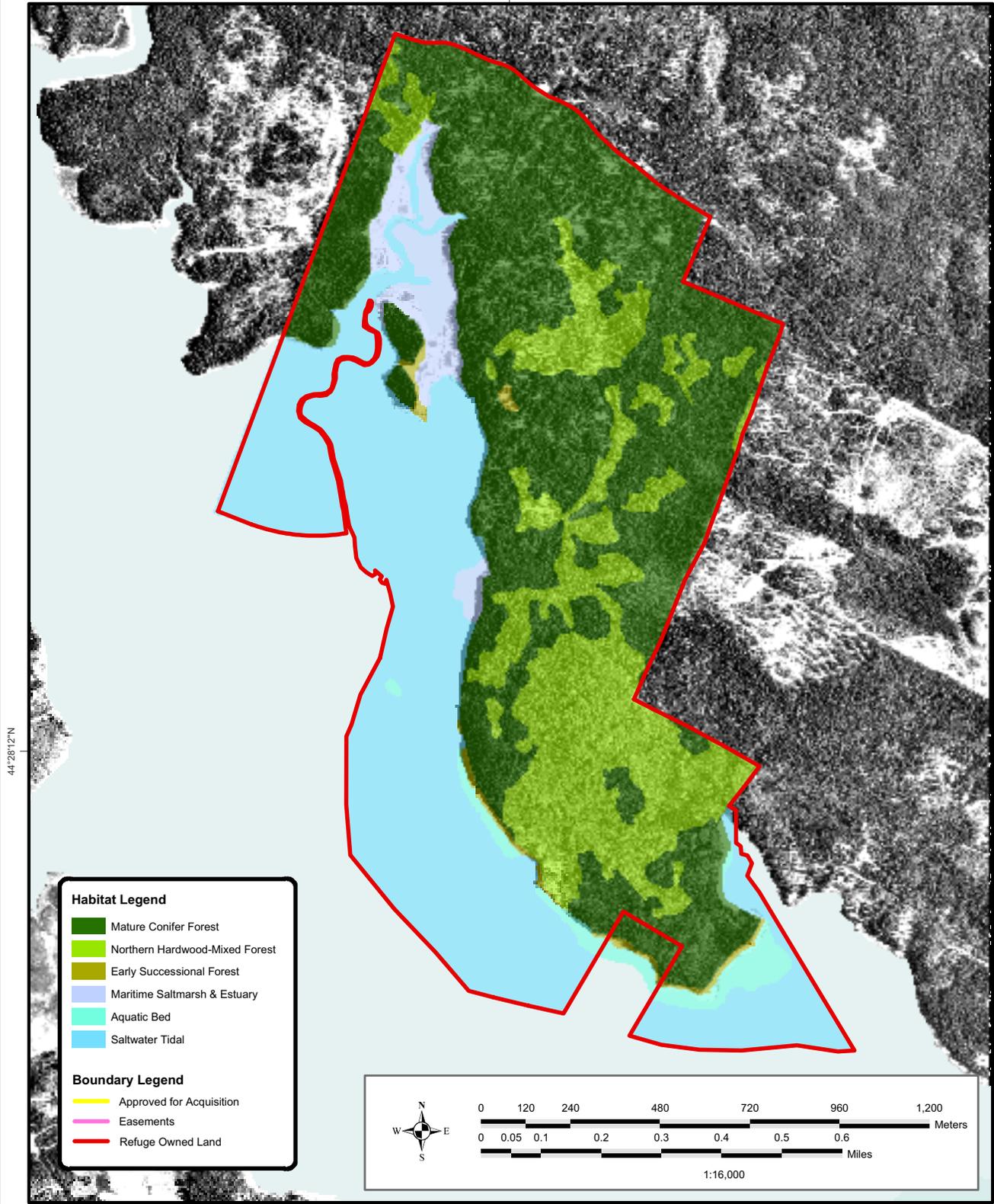




MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Gouldsboro Bay Division Cover Types

68°0'39"W



Habitat Legend

-  Mature Conifer Forest
-  Northern Hardwood-Mixed Forest
-  Early Successional Forest
-  Maritime Saltmarsh & Estuary
-  Aquatic Bed
-  Saltwater Tidal

Boundary Legend

-  Approved for Acquisition
-  Easements
-  Refuge Owned Land



1:16,000

68°0'39"W

Sawyers Marsh Division Acquisition History

The Sawyer's Marsh Division, Town of Milbridge, Washington County, consists of 933 acres acquired through fee title in 1998 and 2000. Map 3-30 depicts the current Service ownership. The area lies to the northeast of Petit Manan Point, at the head of a broad tidal marsh used extensively by migratory shorebirds and waterfowl, including black duck, goldeneye, wood ducks and Canada geese. A majority of the marsh is privately owned. The outlet for this tract is Bobby's Creek estuary, which eventually drains into the Narraguagus River and the Gulf of Maine.

Biological Resources

The upland habitat surrounding the marsh consists of several large stands of white birch, various other hardwood species, red spruce, and balsam fir. Forest stand age varies throughout this upland, as a portion of the area was burned in a wildfire in the early 1950's, and timber harvesting occurred on the property prior to acquisition by the Service.

A national vegetation classification standards cover type map was completed in 2002. A summary of habitat cover types by acre is presented in Table 3-40; Map 3-31 portrays the cover types on the landscape.



Dragonfly
USFWS photo

Table 3-40 Sawyers Marsh Division habitat cover types by acres

Cover Type	Acres (GIS)	Percent (%) of Area
Early successional forest	4	0.4
Mature conifer forest	403	43
Freshwater wetland	69	7.4
Northern hardwood - mixed forest	455	49
Maritime saltmarsh & estuary	2	0.2
Total	933	100

Many species of shorebirds and wading birds utilize the shallow waters and adjacent intertidal areas for feeding.

A seasonal biological technician was hired in 2002 to initiate baseline wildlife surveys. Waterbird surveys are currently being done on this area. We have also recently initiated extensive survey efforts for spiders. To date, 178 spiders species have been documented on the refuge, including several new records for the state of Maine, and several previously undescribed species (Jennings 2001 and Jennings 2002). Efforts to document presence and abundance of amphibians and vernal pools on Sawyers Marsh Division will continue.

Public Use

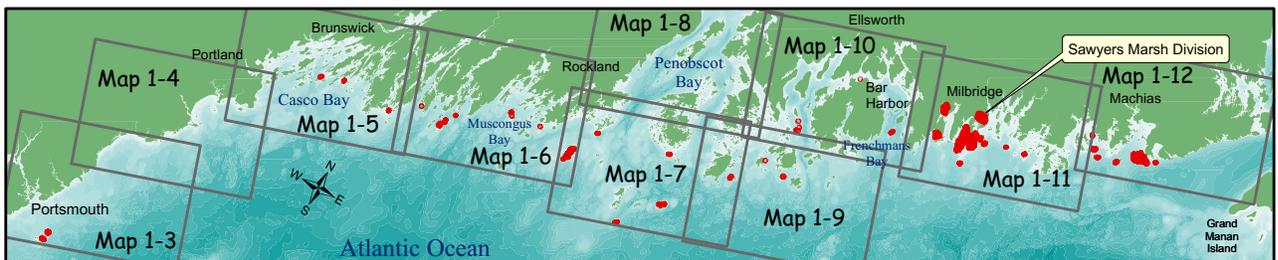
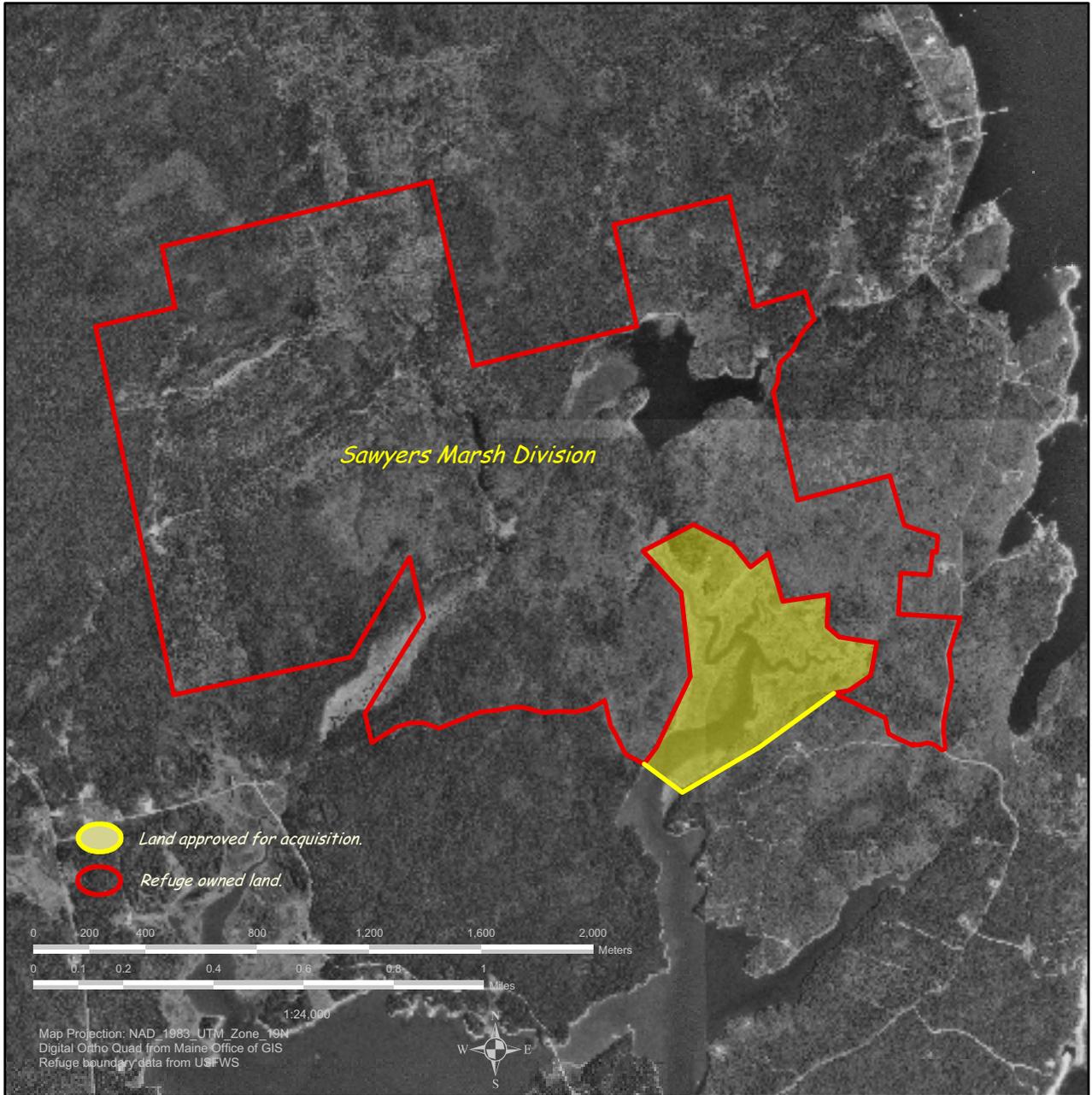
This area allows little opportunity for public access as it is surrounded by privately-owned land. ATVs vehicles are, however, illegally using this area for access to the saltmarsh similar to the Gouldsboro Bay Division. Signs are in place to alert ATV users that vehicles are not allowed on refuge lands.

This division is open to hunting migratory gamebirds and waterfowl, and small and big game under State and Refuge regulations.



MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Sawyers Marsh Division





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

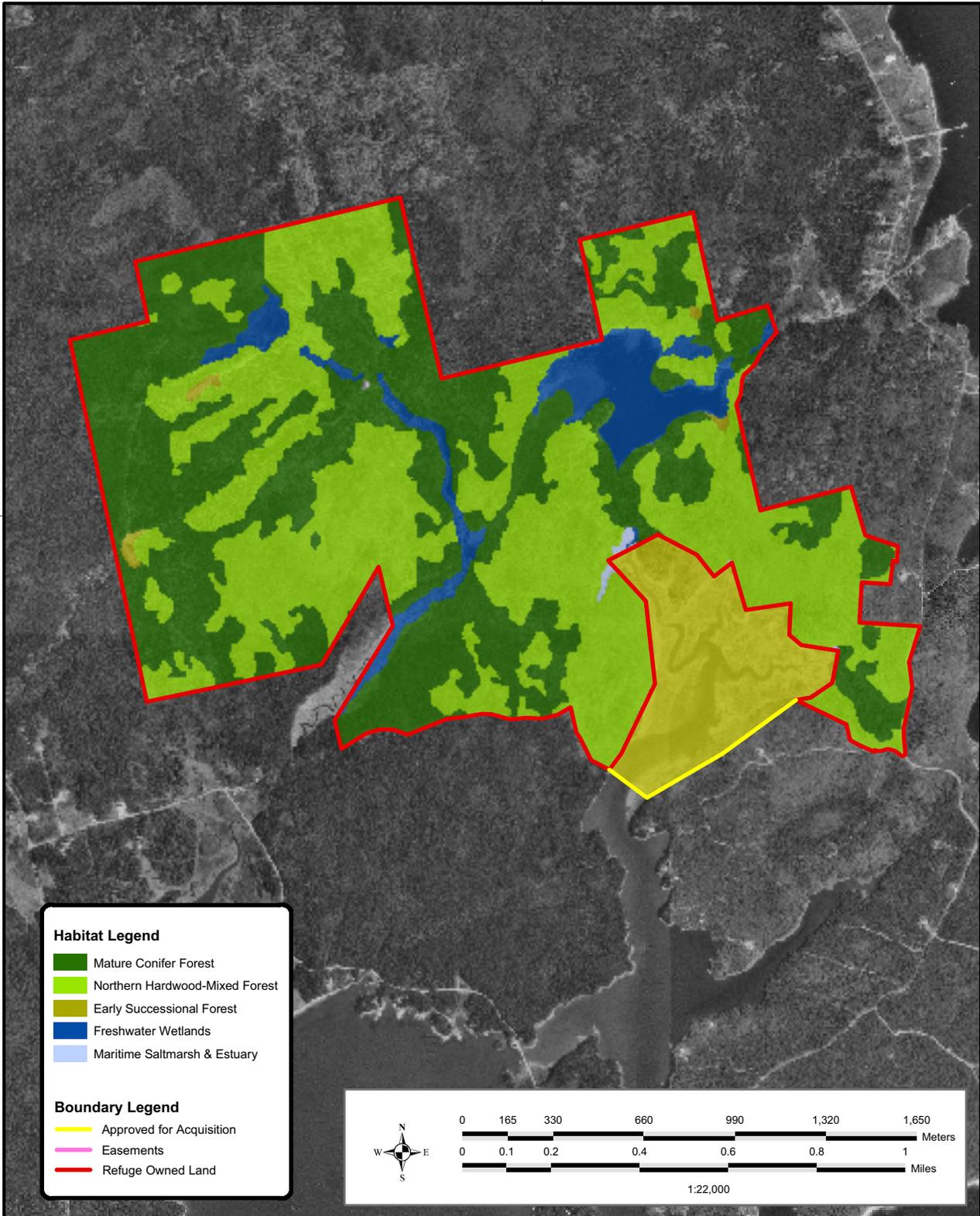
Sawyers Marsh Division Cover Types



67°52'30"W

44°30'37"N

44°30'37"N



Habitat Legend

- Mature Conifer Forest
- Northern Hardwood-Mixed Forest
- Early Successional Forest
- Freshwater Wetlands
- Maritime Saltmarsh & Estuary

Boundary Legend

- Approved for Acquisition
- Easements
- Refuge Owned Land



0 165 330 660 990 1,320 1,650 Meters

0 0.1 0.2 0.4 0.6 0.8 1 Miles

1:22,000

67°52'30"W

**Corea Heath Division
(pending transfer from
the U.S. Navy)****Acquisition History**

The Corea Heath Division is an approximately 400 acre raised coastal peatland situated on the Schoodic peninsula in the Town of Gouldsboro, Washington County. The U.S. Navy has occupied the site since the 1950's, using it as a communications facility (a high frequency direction finding network). Roads, support buildings, and extensive antennae arrays marked the landscape during this time. In 2002, the U.S. Navy ended its mission on Schoodic peninsula and began the transfer of U.S. Navy lands to the National Park Service as part of Acadia National Park, to the towns of Gouldsboro and Winter Harbor, and to the Service. The Corea Heath portion of the former U.S. Navy facility was designated for transfer to the Service. Map 3-32 depicts which lands are approved for the transfer to the Service. The transfer is scheduled for 2004. In addition to the botanically significant peatland or "heath," the Service will also receive 3 to 4 acres with two buildings that can be used for future office and storage space.

Biological Resources

The ecological values and unique features of Corea Heath are well-documented (Worley 1980, Glanz et al. 1999). Characterized as a coastal plateau bog, the area is wholly affected by a maritime climate which is in part responsible for the varied plant communities that occur there. Among



Indian Pipe is only one of the many plant species that flourishes on Refuge lands.
USFWS photo

115 coastal raised peatlands in Maine, Corea Heath ranks 5th for coastal peatland features, and 6th for all peatland features.

In 1950, the U.S. Navy designated a 240 acre portion of the heath as an Ecological Preserve Area. Ecological communities occurring at Corea Heath include: open bog, forested bog, open fen, acidic ledges, coniferous and birch woodlands, and more than a mile of boulder and cobble shoreline.

A biological inventory was completed by the University of Maine and Acadia National Park in 1996. Floral and faunal inventories included amphibians, terrestrial mammals, bats, birds, and bryophytes. A copy of the biological inventory is on file at the Refuge office in Milbridge.

A national vegetation classification standards cover type map was completed in 2002. A summary of habitat cover types by acres is presented in Table 3-41 below; Map 3-33 portrays these cover types on the landscape.

Table 3-41 Corea Heath Division habitat cover types by acres

Cover Type Area	Acres (GIS)	Percent (%) of
Northern hardwood -mixed forest	59	14.7
Early successional forest	26	7
Freshwater wetland	179	44.7
Mature conifer forest	129	32
Jack pine woodland	1	0.2
Saltwater tidal / aquatic bed	3	0.7
Building / camp	3	0.7
Total	400	100

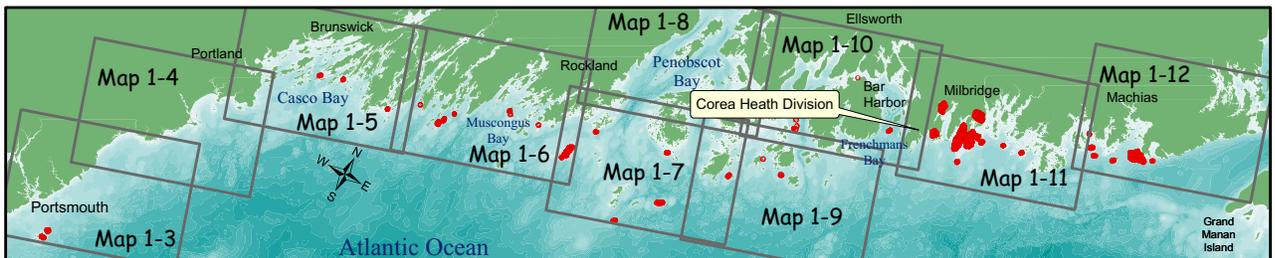
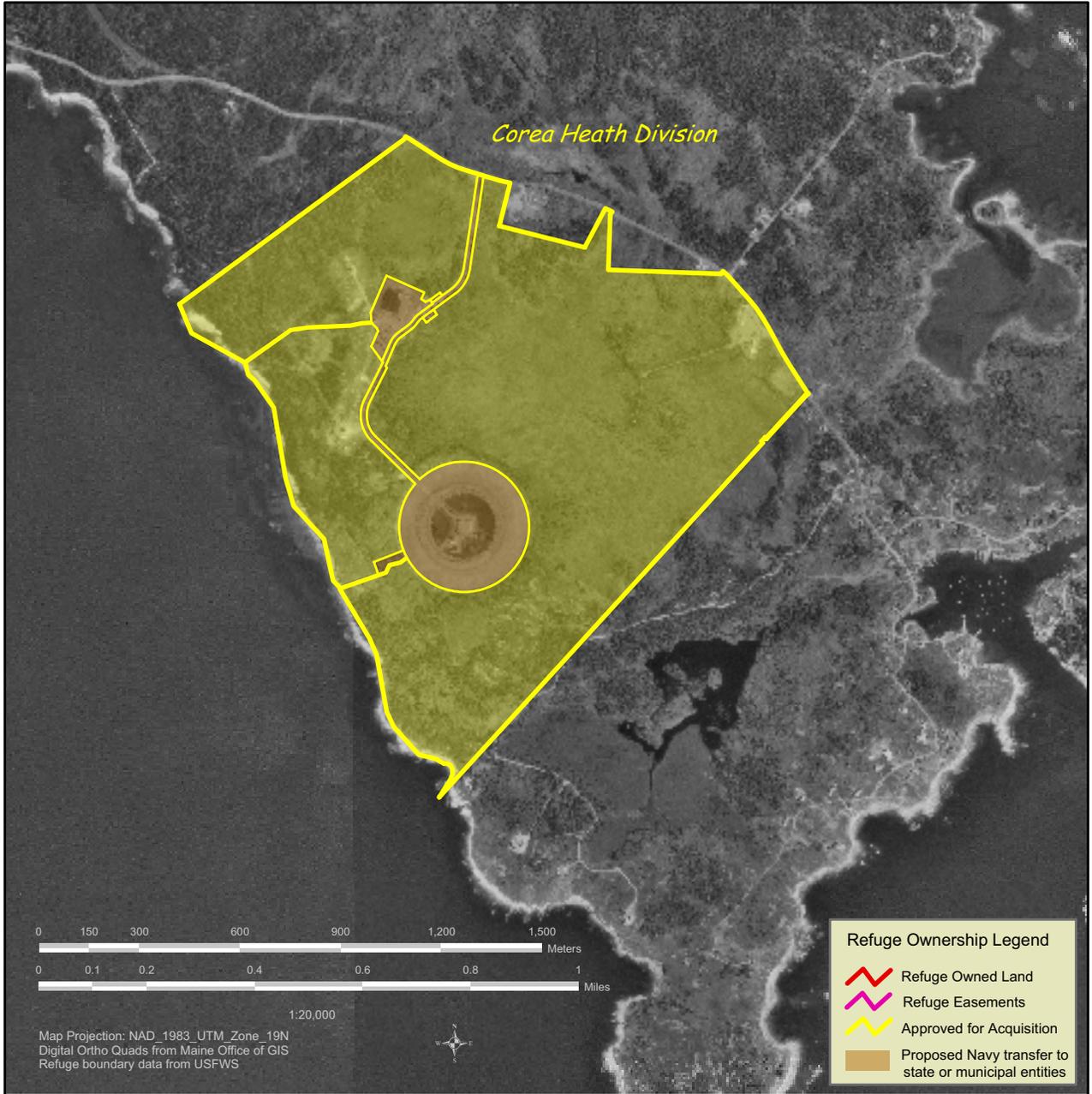
Public Use

The area has been closed to public access and use since it was acquired by the U.S. Navy in the 1950's.



MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Corea Heath Division



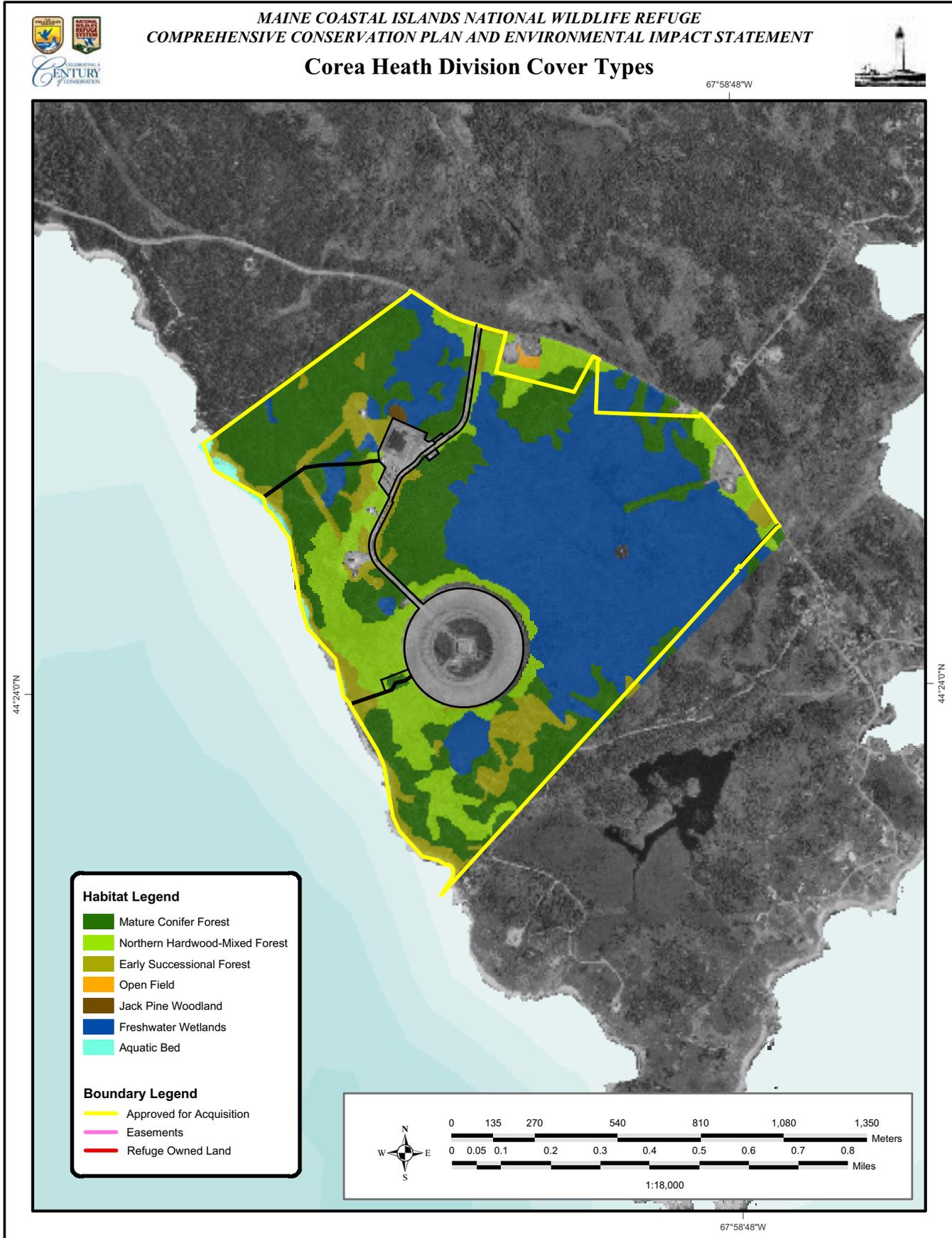


Table 3-42 Summary of cover types by location on Maine Coastal Islands National Wildlife Refuge

Cover Types	Petit	Gouldsboro Bay	Sawyers Marsh	Corea Heath	All 4	Bois Bubert Island	Cross Is NWR (6 isl)	Other*	Total Acreage
	Manan Point Division				Divisions Total Acreage				
Open Field Grassland	70	0	0	0	70	0	0	392.5	462.5
Early Successional Forest/Shrub Habitat	226	5	4	26	261	164	29	105.5	559.5
Freshwater Wetland	219	0	69	179	467	28	99	49	643
Maritime Saltmarsh & Estuary	8	28	2	0	38	4	27	0	69
Mature Conifer Forest	905	253	403	129	1690	734	1248	162.2	3834.2
Northern Hardwood-Mixed Forest	453	123	455	59	1090	92	53	0	1235
Jack Pine Woodland	11	0	0	1	12	28	0	0	40
Saltwater tidal/Aquatic bed	302	198	0	3	503	271	240	17.5	1031.5
Camps/Buildings	1	0	0	3	4	0	0	0	4
Ledge	0	0	0	0	0	0	7	75.5	82.5
Totals	2195	607	933	400	4135	1321	1703	802.2	7961.2

* Acres estimated from aerial photos; other acres in table are either survey acres or deed acres.

“Other” Refuge Islands
(Listed Under Their Predominant Cover Type)

Conifer Forest

Outer Heron (66 acres)
 Inner Sand (18 acres; 15 forested/3 shrub)
 Schoppee (16.5 acres)
 Little Marshall (14 acres)
 Sally (1 acre)
 Abbott (3.5 acres)
 Franklin (12 acres; 7 forested/5 grass)

Early Successional Forest/Shrub

Trumpet (3 acres)
 Ship (11 acres; 6 shrub/5 grass)
 Upper Flag (30 acres; 26 shrub/4 wetland)
 Smuttynose (50 acres; 20 shrub/20 grass/10 aquatic bed)
 Crane (12 acres; 8 shrub/4 forested)
 Lower Mark (9.5 acres)

Ledge

Malaga (10 acres; 2.5 ledge/7.5 aquatic bed)
 East Barge (0.5 acres)
 West Barge (0.5 acres)
 Little Roberts (1 acre)

Open Field/Grassland

Metinic (150 acres; 120 grass/30 forested)
 Libby (43 acres)
 Eastern Brothers (17 acres)
 Nash (5 acres)
 Petit Manan (10 acres)
 John's (43 acres)
 Egg Rock (13 acres; 8 grass/5 ledge)
 Roberts (10 acres)
 Two Bush (8 acres)
 Pond (10 acres; 4 grass/6 ledge)
 Seal (65 acres; 35 grass/30 ledge)
 Matinicus Rock (28 acres; 10 grass/18 ledge)
 Bar (17.2 acres; 12 grass/5.2 forested)
 Inner White (5 acres; 3 grass/2 ledge)
 Outer White (16 acres; 11 grass/5 ledge)
 Ram (10 acres; 8 grass/2 ledge)
 Little Thrumcap (8.5 acres; 5.5 grass/3 ledge)
 Machias Seal (10 acres; managed under MOU with MDIFW)

Wetland

Halifax (75 acres; 45 wetland/30 shrub)

Chapter 4



Seaside sedge
USFWS photo

Management Direction

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

Introduction

This CCP includes an array of management actions intended to achieve the Refuges' purposes, the vision and goals for the Refuge, and Gulf of Maine, State, and regional conservation plans. In our opinion, these actions effectively address the significant issues identified in the Draft and Final EIS. We also believe this CCP represents a plan that is reasonable, feasible, and practicable.

In all program areas, this CCP will enhance the quality and sustainability of current resource programs, develop long-range and strategic step-down plans, promote partnerships, and restore habitats for species of management concern. The protection, management, and restoration of seabirds will remain our top priority (Goal 5). We will increase our responsibility in promoting nesting seabird conservation in the Gulf of Maine by establishing six new seabird restoration projects over the next 15 years. In addition, our other priority biological programs will become more focused to benefit species of concern, namely migratory land birds, waterfowl and shorebirds. We will continue the vegetation management programs on Petit Manan Point and the islands, using a combination of treatments such as mechanical, prescribed fire, herbicides, and sheep grazing, as necessary. In addition, we will strengthen our biological inventory and monitoring program to allow us to better evaluate our programs and make more informed decisions.

We will increase our land acquisition and cooperative land protection program, including the 467 acres within our currently approved boundary, and an expansion of 87 nationally significant coastal nesting islands (2,306 acres), and 2 mainland tracts (153.3 acres) important to migratory waterfowl and shorebirds (See Land Protection Plan, Appendix A). All 87 islands have active nesting by Federal- and State-listed species and/or other species of concern, including: roseate tern, bald eagle, Atlantic puffin, common tern, Arctic tern, and razorbills. In addition to Service acquisition, we will

work with MDIFW, other GOMSWG members, and land conservation partners to support their efforts to protect additional active and potential nesting sites. It is through this cooperation that we could best achieve the goal of protecting well-distributed bald eagle, seabird, wading bird, and waterfowl nesting islands throughout the Gulf of Maine.

We will increase opportunities for priority wildlife-dependent public uses, especially in environmental education and interpretation. We will provide environmental education teacher and student workshops using the Refuge mainland divisions as a field classroom. We will provide interpretive panels at strategic locations along coastal Route 1, and place Service



Herring gull
USFWS photo

interpreters on board commercial tour boats. We will develop an interpretive trail and parking area at both the Gouldsboro Bay and Sawyers Marsh divisions, and a trail and observation platform at the Corea Heath Division. Our hunt program will be expanded to include a new white-tailed deer hunting opportunity on the Petit Manan Point Division. We expect an increase in visitation of approximately 15-20% over current levels with implementation of these programs. This increased use will occur primarily on the mainland divisions. Maps 4-1 to 4-4 at the end of this chapter, depict our existing and proposed infrastructure on the four mainland divisions.

We will enhance local community outreach and partnerships, continue to encourage our Friends Group, and improve our relationships with our neighbors and elected officials. We believe these efforts will strengthen support for natural resource conservation in the local communities we serve.

Finally, this CCP includes our recommendation to our Director that we pursue Federal wilderness designation on 13 Refuge islands, which we have grouped into 8 wilderness study areas. Our management of these islands will not change appreciably over how we manage them currently. We have no management activities planned that will be affected by this designation. We believe these islands could be an important addition to the National Wilderness Preservation System.

General Refuge Management

Invasive and Exotic Plant Management

Controlling invasive and exotic plant populations is a priority for the Refuge System. National and regional teams of experts and managers have convened to deal with this issue. Fortunately, on the Refuge and to the best of our knowledge, invasive and exotic plants, while present, are not presently a huge threat to native biodiversity and ecosystem function on the mainland or islands. Nevertheless, we recognize the need to remain vigilant to prevent their expansion, especially to new areas. As a group, these plants tend to be aggressive in establishing themselves and require frequent and thorough treatments to control them. We will provide active management to control their presence and spread, through the selected treatments including, mechanical, chemical, biological, fire, and livestock grazing.

Machias Seal Island Coordination

Machias Seal Island has some of the highest numbers and diversity of nesting seabirds of any island in the Gulf of Maine. While we identified in Chapter 2 that sovereignty of this island is an issue between the U.S. and Canadian governments, this has not diminished the strong partnership between the Canadian Wildlife Service, MDIFW, and Refuge staff to protect these nesting seabirds. Annual meetings are held to discuss public use, seabird research, and the results of surveys. We will continue our active involvement in this partnership.

**Native American
Coordination**

Within three years of CCP approval, we will develop a partnership agreement to establish a mutually beneficial working relationship with interested Wabanaki Tribes that includes cooperating in: the identification, inventory, and protection of cultural resources; developing environmental education and interpretative programs using oral and written sources; youth programs; sharing of technical expertise; or any other programs of mutual interest.

**Coast Guard
Coordination**

Within two years of CCP approval, we will develop a Memorandum of Understanding (MOU) with the U.S. Coast Guard. This MOU will be designed to facilitate their maintenance and protection of navigational equipment on Refuge lands, including access to these sites.

**Protecting and
Managing Cultural
Resources**

We take seriously our responsibility to consider the effects of our actions on archeological and historic resources. We will comply with Section 106 of the National Historic Preservation Act before disturbing any ground. Compliance may require any or all of the following: review of State Historic Preservation Office records, consultation with Native American Tribal Historic Preservation offices, a literature survey, or field survey.

In addition, we will continue our program to maintain historic lighthouses and/or associated structures to at least minimum national historic preservation standards. The Service is responsible for maintaining historic structures on Petit Manan Island (light keepers dwelling and outbuildings), Matinicus Rock (lighthouse, light keepers dwelling, and outbuildings) and the fog signal buildings and lighthouses on Libby Island and Egg Rock.

As noted under Objectives 7.1 and 7.3, we will be acquiring additional refuge lands. However, we are not purposefully seeking to acquire any more historic structures with these purchases, except as necessary to protect Federal trust resources.

**Maintaining Water
Impoundments on Petit
Manan Point Division**

There are three connected freshwater impoundments on Petit Manan Point Division covering approximately 112 acres. The water control structures will be maintained to provide stopover and foraging habitat for fall migrating waterfowl, wading birds, and shorebirds. The impoundments require minimal maintenance and are particularly valuable for fall migrating waterfowl, including black duck, because they provide freshwater and forage in close proximity to the coastline. They consistently hold thousands of fall migrating ducks which move through continuously until the water is frozen.

**Refuge Revenue
Sharing Payments**

We will continue annual refuge revenue sharing payments to the 20 Maine coastal towns in which Refuge lands are located. Future increases in payments will be commensurate with increases in the appraised values of Refuge lands, new acquisitions of land, and the level of Congressional appropriations.

Refuge Headquarters and Coastal Education Center

We will continue to pursue the idea of a new Refuge Headquarters and Coastal Education Center in the mid-coast area. We will work with our partners, including National Audubon Society, Maine Audubon Society, the Friends Group, and MDIFW to establish a vision, agree on conceptual design criteria for the education facility, and explore possible site locations. Our preliminary discussions included ideas that the center could provide such things as interpretive exhibits, trails, and staff- and volunteer-led environmental education and interpretive programs. Once a conceptual idea of the center is developed, and we have some prospective sites to evaluate, we will proceed with a separate environmental assessment, including public involvement, before a final decision is made.

Technical Assistance to Landowners

We will continue to provide technical assistance to landowners interested in enhancing or protecting their lands for wildlife. During public scoping, many people stated that this is an important community service provided by the Refuge staff that should continue.

Partnerships

We support partnerships to the fullest extent possible. These are vital to successfully managing all aspects of the Refuge, from land protection to habitat and species management, to public use activities. We listed many of our valuable partners in Chapter 1 and 3, but we will also pursue new ones of mutual interest and benefit to Refuge goals and objectives.

Friends Group Support

We will continue to support the Friends of Maine Seabird Islands association which has recently formed in the Rockport area. Their focus is on outreach and advocacy for the Refuge's seabird restoration and island protection program and the proposed coastal education center. We anticipate this group will provide us with valuable assistance in implementing our CCP. Similarly, we will seek opportunities to create a second Refuge Friends Group in down-east Maine.

Volunteer Opportunities

We will continue our successful volunteer program. Thousands of hours of work have been accomplished by volunteers who perform administrative, public use, and biological duties. This program has enhanced our ability to complete many tasks associated with refuge management.

Special Use Permits (including Research and Commercial Activities)

Requests for special use permits will be evaluated for appropriateness and compatibility on a case-by-case basis by the Refuge Manager. At a minimum, all commercial activities and all research projects require special use permits. Existing, compatible, and approved special use permits will continue to be allowed. In the future, research projects that will improve and strengthen natural resource management decisions on the Refuge will be encouraged. Research on species of concern and their habitats will continue to be a priority. The Refuge Manager may also consider research not directly related to refuge objectives, but which contributes to the broader

enhancement, protection, or management of native species and biological diversity within the region and beyond.

We will promote partnerships with local universities and colleges, USGS and other Federal and State research agencies. The Refuge Manager will determine on a case-by-case basis whether they can directly support a project through funding in-kind services (e.g. housing or use of other facilities), field assistance, or through sharing data and records.

All researchers on refuges, current and future, will be required to submit a detailed research proposal following Service policy in the FWS Refuge Manual, Chapter 4, Section 6. Special use permits must also identify a schedule for progress reports (at least annual), criteria for determining when a project should cease, and publication or other final reporting requirements. Multi-year projects should be established under a cooperative agreement. The Regional Division of Natural Resources, other Service divisions, and State agencies will be asked to review and comment on research proposals. Research results will be shared within the Service, with MDIFW, and elsewhere as appropriate.

Some projects, such as depredation and banding studies, require additional Service permits.

These projects will not be approved until all the Service permits and Endangered Species Act consultation requirements are met. Also, to maintain the natural landscape of Refuge lands, any proposals for permanent or semi-permanent structures will not be allowed, except under extenuating circumstances such as seasonal camps for future restoration projects.

Refuge Goals, Objectives and Strategies

As we described in Chapter 2, developing goals for the Refuge was one of the first steps in our planning process. Our goals are intentionally broad, descriptive statements of desired future condition for Refuge lands. By design, they are not quantitative, but are more prescriptive in defining the targets of our management. They also articulate the principal elements of refuge purposes and our vision statement, and provide the foundation for developing specific management objectives.

After developing our goals, we considered a wide range of possible management objectives that would help us meet them. Essentially, objectives are incremental steps we take to achieve a goal and they further define the management targets in measurable terms. Objectives provide the basis for determining more detailed strategies, monitoring refuge accomplishments, and evaluating our successes. Service guidance in “Writing Refuge Management Goals and Objectives: A Handbook (November 2003)” recommends that objectives possess 5 properties. They should be: 1) specific; 2) measurable; 3) achievable; 4) results-oriented; and 5) time-fixed. Together these properties constitute the acronym referred to as “SMART” objectives.

The objectives we considered ranged from those that require only a minimum level of funding and staffing, to those that would require a considerable increase in funding, staffing, infrastructure, and partnership development. Some of our objectives directly relate to habitat management, while others strive to meet population targets tied to recovery plans, regional, or Gulf of Maine species and habitat goals. With each objective statement, we provide a background narrative so you can understand its context and why we think it's important. The objectives of this CCP will be used directly in respective Refuge step-down plans, including the Habitat Management and Visitor Services plans, which are described further in Chapter 5. Our successes will be based on how well we achieve our objectives.

Goal 1: Perpetuate the Biological Diversity and Integrity of Upland Cover Types on the Refuge's Mainland to Sustain High Quality Habitat for Migratory Birds

Objective 1.1 (Blueberry Barrens - Old Field)

On the Petit Manan Point Division, maintain 70 acres of blueberry barren and old field to provide nesting and migratory habitat for landbirds of high conservation priority in PIF Area 28, such as bobolink, American woodcock, and whimbrel.

Background: The Partners in Flight (PIF) Landbird Conservation Plan for Physiographic Area 28 (Eastern Spruce-Hardwood Forest; June 2000) has identified the need to maintain blueberry barrens and active agricultural land to provide breeding habitat for the species noted above which are all documented on Petit Manan Point. This plan also acknowledges that this cover type contributes to the overall avian richness of Area 28; an area which is dominated by spruce-fir forest. In this PIF area, there is particular concern with bobolink which have been declining significantly (~3%/ year). American woodcock, which depend on old fields and clearings for courtship displays in the spring, are also declining at a rate of 2-3% per year. Compared to other PIF physiographic areas, Area 28 supports the highest relative abundance of breeding American woodcock. The decline of species dependent on open fields is closely correlated with the recent trends of

increased residential and commercial development and the declining interests in agriculture; each resulting in a reduction of grasslands, open fields, and pastures within Maine.

We have a Monitoring Avian Productivity and Survivorship (MAPS) station in this cover type on Petit Manan Point which has been in place five years. The emphasis in the MAPS program is to focus on demographic parameters such as Neotropical landbird survival and productivity rates, in an effort to identify factors that may be causing population fluctuations. The MAPS program methodology provides annual indices of adult population size and post-fledging productivity using data on the numbers and proportions of



Hooded warbler
USFWS photo

young and adult birds captured; and, annual estimates of adult survivorship, adult population size, proportion of resident individuals in the adult population, and recruitment into the adult population from mark-recapture data on adult birds (DeSante et. al. 2001). This information would supplement the significant effort spent across the United States in conducting Breeding Bird Surveys to determine population size and trends. Our results from this station indicate this station is incredibly rich in species diversity and is also highly productive.

In addition to providing breeding habitat, these open fields provide important foraging habitat for migratory birds during spring and fall migration. Most migratory birds rely on seeds, fruits, and insects to sustain them through migration (Blake and Hoppes 1986). While difficult to quantify, the foraging habitat provided during migration is considered a vital component of the overall habitat quality. Opportunities to improve the fields for seed, fruit and insect production are important in managing this cover type. In addition, we need to remain vigilant with regards to invasive and exotic plants. While not presently a concern, we must continue to be watchful of their presence and work actively to prevent their establishment.

Finally, this cover type supports our efforts to achieve Objective 6.5; that is, the open fields provide high quality, accessible wildlife viewing opportunities.

Strategies:

- continue annual woodcock surveys on Petit Manan Point.
- continue MAPS and Regional landbird surveys according to their respective protocols to determine nesting and migratory landbird response to habitat management. Conduct respective surveys as often as needed to monitor population trends confidently. Incorporate data into GIS database.
- as identified in Fire Plan EA and annual burn plan, continue to burn field units on a three-to-five-year rotation using the 11 burn unit configuration. Combine prescribed fire with mowing or other mechanical treatments, herbicides, and/or biological treatments to maintain desirable structure and control invasive plants.

Within 5 years of CCP implementation:

- review and revise existing cover-type map for Petit Manan Point Division and incorporate into a GIS database.
- in the HMP, include strategies to manage this cover type to provide the best mix and configuration of age classes and structural diversity to benefit nesting and migratory birds across the landscape. Consider the most appropriate management of age classes given the surrounding land ownership and management and what refuge lands can uniquely sustain over time. Utilize vegetative treatments such as mechanical, biological, chemical, and prescribed fire, where appropriate, to manage desirable vegetation and to control invasive and exotic plants. Refine objectives as needed with new information gained from revised cover type mapping.



Prescribed burning
USFWS photo

- Up to 110 acres could be prescribed burned in any given year across the refuge to achieve this and other habitat objectives. Consult with Regional Fire Management Officer when developing prescribed fire management prescriptions.
- participate in the Atlantic Northern Forest Bird Conservation Region Planning efforts, the PIF Working Group, and other regional landscape-scale efforts to review and evaluate the Refuge's contribution to the habitat and population objectives identified in regional, state, PIF, and species-specific plans. Update HMP as needed.

- in HSIMP, include monitoring for exotic and invasive vegetation on an annual basis.
- hire a Wildlife Biologist (GS 9) to help collect and manage field data.

Objective 1.2 (Northern Hardwood-Mixed Forest)

Maintain 1,090 total acres of northern hardwood-mixed forest habitat (453 acres on the Petit Manan Point Division; 123 acres on Gouldsboro Bay Division; 455 acres on the Sawyers Marsh Division; and 59 acres on Corea Heath Division), to provide nesting habitat for landbirds of high conservation priority within PIF Area 28 such as black-throated blue and Canada warblers.

Background: The northern hardwood-mixed forest is usually dominated by sugar maple, beech, birch, and white pine. Similar to the open field habitat in Objective 1.1, this cover type provides valuable habitat for nesting land birds, including the Federal-listed bald eagle, as well as foraging and resting habitat for migrating land birds. According to the PIF Plan for Area 28, the importance of this habitat type is considerable because of the number of associated bird species with high proportions of their total population in the planning unit. Of particular note is the fact that nearly 25% of the world's black-throated blue warblers are estimated to breed in Area 28. A majority of high priority species in this habitat, including the black-throated blue and Canada warblers, are dependent on a relatively dense forest understory for foraging and nesting. To benefit migrating birds, the PIF Plan recommends maintaining a balance of forest age structures, including mid-successional and late-successional forest, and providing structural diversity (shrubs and treefall) within the forest.

We have had a MAPS station for five years in this cover type at Petit Manan Point Division and for three years at Gouldsboro Bay Division. Our results indicate that this habitat type is consistently utilized by the species

of concern noted in the objective statement. We are not recommending any vegetation management at this time to enhance this habitat for a certain species. We believe several more years of MAPS monitoring is desirable to establish trend and preferences at these sites.

Strategies:

- continue to participate in the Atlantic Northern Forest Bird Conservation Region planning efforts; incorporate specific strategies into HMP as warranted
- continue annual MAPS survey on the Petit Manan Point Division and Gouldsboro Bay Division, and annual Regional landbird surveys on Petit Manan Point, Sawyers Marsh and Gouldsboro Divisions according to respective protocols to determine nesting landbird response. Evaluate data on an annual basis. Conduct respective surveys as often as needed to establish trend information. Incorporate data into GIS database. By 2006 season, determine whether to expand MAPS survey to Sawyers Marsh Division.
- continue to cooperate with MDIFW in annual monitoring for bald eagle occupancy and productivity at the bald eagle nest located in the Gouldsboro Bay Division.
- continue to update, as needed, the cover type map for Petit Manan Point, Sawyers Marsh and Gouldsboro Bay divisions. Incorporate updates into a GIS database.

Within 5 years of CCP implementation:

- in HMP, include strategies to manage these forest stands to minimize fragmentation and provide the best mix of forest age class and structural diversity to benefit nesting and migratory birds across the landscape. Consider the most appropriate management of age classes given the surrounding land ownership and management and what refuge lands can uniquely sustain over time. Utilize vegetative treatments such as mechanical, biological, chemical, and prescribed fire, where appropriate, to manage desirable vegetation and to control invasive and exotic plants. Refine objectives as needed with new information and the new and revised cover type mapping.
- participate in the Atlantic Northern Forest Bird Conservation Region Planning efforts, the PIF Working Group, and other regional landscape-scale efforts to review and evaluate the Refuge's contribution to the habitat and population objectives identified in regional, state, PIF, and species-specific plans. Update HMP as needed.
- in HSIMP, include monitoring for exotic and invasive vegetation on an annual basis.
- hire a Wildlife Biologist (GS 9; same position as Objective 1.1)

Objective 1.3 (Mature Red Spruce-Balsam Fir Forest)

Maintain 1,690 total acres of mature conifer forest habitat (905 acres on the Petit Manan Point Division; 253 acres on Gouldsboro Bay Division; and 403 acres on Sawyers Marsh Division), to provide nesting habitat for landbirds of high conservation priority within PIF Area 28 such as bay-breasted warbler, Cape May warbler, and spruce grouse.

Background: This mature conifer forest habitat is usually dominated by red spruce and balsam fir. The PIF Plan for Area 28 identified the need for conservation lands to maintain a large percentage of land area in mature (> 50 years old) red spruce and balsam fir to offset those private lands under intensive forest management. Although conifers dominate a large percentage of Maine's forests, the forest industry has favored shorter harvest rotations which has created younger, even-aged forested stands that are more monotypic and have less structural and age-class diversity compared to older stands. These younger, even-aged forests typically have a lower supply of downed and standing dead wood, more uniform vertical structure and canopy gaps, and a highly altered plant and animal composition (Elliott 1999). Each of these characteristics reduces the quality of nesting, foraging, and migratory habitat for landbirds of high conservation priority within PIF 28.

Strategies:

- continue to participate in the Atlantic Northern Forest Bird Conservation Region planning efforts; incorporate specific strategies into HMP as warranted
- continue annual MAPS survey on the Petit Manan Point Division, and annual Regional landbird surveys on Petit Manan Point, Sawyers Marsh and Gouldsboro Bay divisions according to respective protocols to determine nesting landbird response. Conduct respective surveys as often as needed to establish trend information. Incorporate data into GIS database. By 2006 determine whether to expand MAPS effort to Sawyers Marsh Division.
- continue to cooperate with MDIFW in annual monitoring for bald eagle occupancy and productivity immediately upon discovering an eagle nest in this habitat type (none are known on Refuge mainland properties at this time).

Within 5 years of CCP implementation:

- revise cover type map for the Petit Manan Point, Sawyers Marsh and Gouldsboro Bay divisions. Incorporate information into a GIS database.
- in HMP, include strategies to manage these forest stands to minimize fragmentation and provide the best mix of forest age class and structural diversity to benefit nesting and migratory birds across the landscape. Consider the most appropriate management of age classes given the surrounding land ownership and management and what refuge lands can

uniquely sustain over time. Utilize vegetative treatments such as mechanical, biological, chemical, and prescribed fire, where appropriate, to manage desirable vegetation and to control invasive and exotic plants.

Refine objectives as needed with new information and the new and revised cover type mapping.



Cedar waxwing - MAPS survey
USFWS photo

- participate in the Atlantic Northern Forest Bird Conservation Region Planning efforts, the PIF Working Group, and other regional landscape-scale efforts to review and evaluate the Refuge's contribution to the habitat and population objectives identified in regional, state, PIF, and species-specific plans. Update HMP as needed.
- in HSIMP, include monitoring for exotic and invasive vegetation on an annual basis.
- hire a Wildlife Biologist (GS 9; same position as Objective 1.1)

Objective 1.4 (Early Successional Forest-Edge)

On the Petit Manan Point Division, annually manage the 226 acres in early successional forest/edge habitat dominated by speckled alder (*Alnus rugosa*), mountain ash (*Prunus americana*), sweet gale (*Myrica gale*) and other shrubs, approximately 2-10' tall, to provide nesting and feeding habitat for landbirds of high conservation priority within PIF Area 28 such as chestnut-sided warbler, American woodcock, and olive-sided flycatcher.

Background: Within PIF Area 28, this habitat was historically created from natural disturbances such as fire, flooding, beaver activity, or severe storms or occurs as a relatively short-lived vegetation stage after agricultural abandonment or logging (Rosenberg and Hodgman 2000). In general, current land management practices strive to avoid these disturbances and, as a result, this habitat type and many landbirds associated with it are in decline throughout PIF Area 28.

Particular attention has focused on the 2-3% per year decline of American woodcock which has occurred since 1968. While woodcock utilize a variety of habitats depending on the season and activity, they utilize early successional forest/edge habitat for foraging, daytime cover, and nesting. Chestnut-sided warbler and olive-sided flycatcher are two other landbird species of high conservation priority which utilize this habitat for nesting.

In addition to nesting, this habitat provides important foraging areas for migratory birds during spring and fall migration. As noted above, most migratory birds rely on seeds, fruits, and insects to sustain them through migration. Opportunities to manage early successional /edge habitat to increase seed, fruit and insect production will be an important consider-

ation. Active management will be necessary to maintain this habitat type; otherwise, over time, much of the upland areas will grow into a spruce-fir forest. However, wetland areas will likely remain as shrub habitat. In addition, we need to remain vigilant with regards to invasive and exotic plants. While not presently a concern, we must continue to be watchful of their presence and work actively to prevent their establishment.

Strategies:

- continue annual MAPS survey and annual Regional landbird surveys on the Petit Manan Point Division according to respective Regional protocols to determine nesting landbird response. Conduct respective surveys as often as needed to establish trend information. Incorporate data into GIS database.

Within 5 years of CCP implementation:

- revise cover type map for the Petit Manan Point Division and incorporate information into GIS database.
- in HMP, include strategies for managing early successional forest/edge habitats to provide the best mix of structural diversity to benefit nesting and migratory birds. Consider the most appropriate management of age classes given the surrounding land ownership and management and what refuge lands can uniquely sustain over time. Utilize vegetative treatments such as mechanical, biological, chemical and prescribed fire, where appropriate, to manage desirable vegetation and to control invasive and exotic plants. Refine objectives as needed with new information and the revised cover type mapping.
- Up to 110 acres could be prescribed burned in any given year on refuge lands to achieve this and other objectives. Consult with Regional Fire Management Officer when developing prescribed fire management prescriptions.
- participate in the Atlantic Northern Forest Bird Conservation Region Planning efforts, the PIF Working Group, and other regional landscape-scale efforts to review and evaluate the Refuge's contribution to the habitat and population objectives identified in regional, state, PIF, and species-specific plans. Update HMP as needed.
- in HSIMP, include monitoring for exotic and invasive vegetation on an annual basis.
- hire a Wildlife Biologist (GS 9; same position as Objective 1.1)

Objective 1.5 (Rare Plant Sites)

On the Sawyers Marsh, Gouldsboro Bay, Petit Manan Point, and Corea Heath divisions, manage rare plant sites to insure their population viability is sustained over time and they continue to contribute to the natural botanical diversity of the area.

Background: Botanical surveys to date have identified five rare plants: swarthy sedge (*Carex adusta*), salt-marsh sedge (*Carex recta*), Nova Scotia false-foxglove (*Agalinis neoscotica*), Pickering's reed bent-grass (*Calamagrostis pickeringii*; State threatened), and moonwort (*Botrychium lunaria*) on the Petit Manan Point Division (see Appendix B for TNC and Maine Natural Area ranking of each species). All five species of plants are considered imperiled in Maine because of their rarity or vulnerability to further decline. One species, Nova Scotia false-foxglove, is also thought to be imperiled globally. Very little is known about their life history requirements and what protection measures are most effective to insure their continued viability. Additional surveys are needed on the Petit Manan Point Division to verify each population's extent and distribution.

We also need to establish what external threats could impact these plants populations. Moreover, we must remain vigilant with regards to invasive and exotic plants. While not presently a concern, we must continue to be watchful of their presence and work actively to prevent their establishment or spread.

Also on Petit Manan Point is an 11-acre Jack pine (*Pinus banksiana*) woodland; a rare plant community in the state. This stand provides a unique and important contribution to the ecological diversity of the area as it is one of only eight sites in the state (Elliott, 1999). Jack pine regenerates best through fire, which consumes the organic matter and exposes a more suitable seedbed of mineral soil (Maine NAP, 1983).

Rare plant surveys have not been initiated on Sawyers Marsh or Gouldsboro Bay Divisions; however, our proposal is to conduct further surveys beginning in 2005. With identification of rare plant populations at these two locations, our concerns would be similar to those addressed for Petit Manan Point.

Several studies have been conducted on the Corea Heath Division and have determined it is an exemplary coastal plateau bog ecosystem. The entire area is considered unique botanically, and is State-designated as a Maine Critical Area. It is recognized as one of the largest and most southerly coastal raised peatlands in North America. The adjacent jack pine stand is also a Maine Critical Area.

The core 240-acre bog (or peatland) complex on Corea Heath division is actually comprised of several smaller peatland communities, including open and forested bogs, and open and forested fens. Fortunately, the U.S. Navy preserved and protected Corea Heath for more than 50 years, by limiting infrastructure developments and not allowing public access. According to information we obtained from the State of Maine Natural Areas Program database, the State-listed threatened plant, Pickerings reed bent-grass occurs here. Two other rare species are suspected in the area: screwstem (*Bartonia paniculata*), as State threatened species, and Wiegand sedge (*Carex wiegandii*), a State species of special concern.

Strategies:

Within 5 years of CCP implementation:

- compile what is known about rare plant life history requirements for the species that have been identified on the Refuge through consultation with botanical experts and literature reviews.
- initiate rare plant surveys on Sawyers Marsh and Gouldsboro Bay Divisions.
- identify location and extent of known populations with GPS, quantify numbers, and identify potential threats, incorporate information into a GIS database; re-establish locations of known plants on Corea Heath Division.
- in HMP, include strategies to manage the health and productivity of these plant populations. Encourage research studies of the viability and persistence of these rare plant populations, emphasizing patterns of reproductive success and limitations imposed by rare plant habitats. Consider use of deer exclosures to help assess effect of feeding on rare plant sites. Consider restricting public access in sensitive areas. Implement survey efforts to locate additional rare plant communities. Utilize vegetative treatments such as mechanical, biological, chemical, and prescribed fire, where appropriate, to manage desirable vegetation and to control invasive and exotic plants before they become established. Refine objectives as needed with new information and the revised cover type mapping.
- Up to 110 acres could be prescribed burned in any given year to achieve this and other objectives. Consult with Regional Fire Management Officer when developing prescribed fire management prescriptions.
- in HSIMP, include monitoring strategies for exotic and invasive vegetation on an annual basis. Establish survey protocol to locate additional rare plant populations. Develop a deer monitoring strategy if warranted.

Goal 2: Maintain High Quality Wetland Habitat on the Refuge's Mainland Coast, Primarily to Benefit Migratory Birds of High Conservation Priority, while also Supporting other Native, Wetland-Dependent Species of Concern

Objective 2.1 (Maritime Saltmarsh and Estuary)

On the Gouldsboro Bay and Petit Manan Point Divisions, maintain the 28 and 8 acres, respectively, of coastal saltmarsh to insure the quality and natural function of the marsh is sustained and providing breeding and/or wintering habitat for species of conservation concern such as Nelson's sharp-tailed sparrow, American black duck, and northern harrier.

Background: Historically, over 90% of saltmarshes in the northeast were parallel-grid ditched by 1938 for mosquito control (Bourn and Cottom 1950). Within PIF Area 28, the most extensive saltwater marshes occur in Canada and these were largely altered through diking for waterfowl production and draining for agriculture. In Maine, salt hay farming was a threat and currently, residential and industrial development are other significant impacts affecting these fragile systems. The PIF Area 28 plan

has identified two species of concern on which to focus conservation efforts: Nelson's sharp-tailed sparrow and American black duck. Other Regional species of concern include northern harrier and migrating shorebirds.

The PIF Area 28 plan ranks Nelson's sharp-tailed sparrow as the highest overall conservation priority, primarily due to its very restricted range and small total populations. Nearly the entire range of the Nelson's sharp-tailed sparrow occurs in PIF Area 28. Unfortunately, its status and habitat requirements are poorly known. It is assumed to breed almost entirely in coastal and estuarine marshes in this area.

The American black duck is a globally vulnerable Watch List species with a large proportion of its range within PIF Area 28. It is considered one of the highest priority species of concern according to the Atlantic Coast and Eastern Habitat Joint Ventures and among the state and provincial agencies where it occurs. Coastal saltmarshes provide breeding habitat for this species, and coastal marshes, estuaries, and sheltered coves are especially important to wintering black ducks (PIF Plan Area 28 plan) for foraging and shelter. Numerous other species of wading birds, waterfowl, and shorebirds also utilize the saltmarshes as feeding areas during the breeding and migration seasons.

Fortunately, the salt marsh habitats on refuge lands are relatively undisturbed. While historic salt haying occurred, all dams associated with this activity have been breached and do not impede natural tidal fluctuations. As such, our management of these areas has been more custodial, limited to monitoring human activities and wildlife use.

Strategies:

- continue to seek acquisition of the 95 acre Sawyer's Marsh tract from willing sellers, which is the remaining inholding in this division.

Within 5 years of CCP implementation:

- in HMP, include strategies to maintain high quality marsh habitat over time. Identify and evaluate threats to the saltmarsh. Utilize vegetative treatments such as mechanical, biological, chemical and prescribed fire, where appropriate, to manage desirable vegetation and to control invasive and exotic plants. Refine objectives as needed with new information and the revised cover type mapping.
- conduct saltmarsh sparrow surveys according to Regional protocol.
- utilize the Global Programme of Action Coalition protocol (USGS) to monitor and evaluate saltmarsh quality and natural function.
- participate in the Atlantic Northern Forest Bird Conservation Region Planning efforts, the PIF Working Group, and other regional landscape-scale efforts to review and evaluate the Refuge's contribution to the

habitat and population objectives identified in regional, state, PIF, and species-specific plans. Update HMP as needed.

- in HSIMP, include monitoring strategies for exotic and invasive species on an annual basis.
- initiate surveys to document use of the Refuge saltmarshes as feeding areas for species of concern during the breeding and migration seasons.

Objective 2.2 (Freshwater Impoundments)

On the Petit Manan Point Division, annually manage the three freshwater wetland impoundments (i.e., Meadow Brook, Mague, and Cranberry) comprising 112 acres, with at least 20 acres of wild rice, to provide high quality feeding and resting habitat during fall migration (September to December) for waterfowl such as American black duck, mallard, northern pintail, and green-winged teal.

Background: Freshwater wetlands throughout Maine have declined from historic levels following hydropower development or conversion to support agricultural, commercial, industrial, and residential development. Currently, the freshwater wetlands on the Petit Manan Point Division provide stop-over habitat for thousands of waterfowl who continuously move through during their fall migration (September to December). In particular, Cranberry Flowage currently receives considerable use during the fall due to the extensive stands of wild rice.

Since there is no public access to Mague and Cranberry impoundments, and no hunting is allowed here, very little disturbance occurs near these freshwater impoundments. As a result, migratory waterfowl are provided with a high quality food source in a relatively undisturbed environment.

As noted in Objective 2.1, the American black duck is a species of high conservation priority that utilizes these wetlands not only during migration, but will use them in conjunction with nesting in the adjacent uplands.



Ducks flying off Cranberry Marsh, a freshwater impoundment on Petit Manan Point Division
USFWS photo

In addition to waterfowl, these freshwater wetlands provide migratory habitat for shorebirds, and nesting and foraging habitat for other species of conservation concern, such as belted kingfisher, northern harrier, northern goshawk, peregrine falcon, and waterbirds such as American and least bittern (USFWS 1995). Unfortunately we do not have extensive information on these species and their use of the impoundments. In particular, the secretive nature of bittern and other marsh and wading birds, and the inaccessibility of their preferred habitat, make it difficult to monitor their population levels. We recognize that the standardized Breeding Bird Surveys are not adequate for

species which occur in inaccessible marshes. Baseline survey information will be utilized in the development or revision of our HMP and in evaluating property for potential land acquisition. Efforts that will further the conservation of these species will be considered a priority during management of Refuge impoundments.

Finally, we need to remain vigilant with regards to invasive and exotic plants. While not presently a concern, we must continue to be watchful of their presence and work actively to prevent their establishment.

Strategies:

- continue to maintain the earthen dikes and culverts, and use beaver deceivers to insure the three impoundments on the Petit Manan Point Division sustain water levels each year for fall migratory waterfowl, water birds, and shorebirds. Manage furbearers as warranted when needed to protect infrastructure.

Within 5 years of CCP implementation:

- map and monitor the distribution of wild rice and other important native wetland vegetation according to Regional protocol; explore all possibilities to expand the distribution of wild rice into Mague Flowage.
- evaluate seasonal use of wetlands by waterfowl, raptors, marsh and wading birds, and shorebirds to potentially develop additional habitat objectives for these species in the HMP.
- include in HMP, strategies to maintain high quality freshwater wetlands habitat over time. Identify and evaluate threats to the wetlands. Utilize vegetative treatments such as mechanical, biological, chemical and prescribed fire, where appropriate, to manage desirable vegetation and to control invasive and exotic plants. Refine objectives as needed with new information and the revised cover type mapping.
- participate in the Atlantic Northern Forest Bird Conservation Region Planning efforts, the PIF Working Group, and other regional landscape-scale efforts to review and evaluate the Refuge's contribution to the habitat and population objectives identified in regional, state, PIF, and species-specific plans. Update HMP as needed.
- include in HSIMP monitoring for exotic and invasive vegetation on an annual basis.
- participate in USFWS Region 5 anuran call count surveys in wetlands considered suitable for amphibians; document species occurrence and abundance and incorporate into GIS database.

Objective 2.3 (Vernal pool wetlands)

Protect all vernal pool habitat on the Refuge to insure no net loss or degradation of this important ecological community and to maintain breeding

habitat for amphibian species of conservation concern, such as wood frogs and spotted salamanders.

Background: In addition to the concerns with freshwater wetland-dependent species noted above, amphibians are also a significant concern. Not only are their populations in decline throughout the Northeast, but because of their physiological traits (e.g. permeable skin) and ecological traits (e.g. complex, two-phase life cycle), they serve as potentially excellent indicators of environmental health (Heyer et. al. 1994). They are sensitive to changes in water quality and quantity; certain types of habitat alteration; nutrient, chemical, and thermal pollution; and acidification of wetlands and forest habitats (Hine 1982 and Klemens 1993). Monitoring changes in their presence and abundance will help us determine if there are unhealthy environmental conditions.

Many of the amphibians of concern to the Refuge rely on vernal pool habitat during all or part of their life cycle. Unfortunately, this habitat type is not fully mapped on the Refuge nor have known sites been intensively surveyed to document the presence of amphibians during the breeding season. Successive surveys will be necessary to evaluate the effects of Refuge management actions on amphibian species diversity and abundance.

Strategies:

Within 5 years of CCP implementation:

- complete surveys of vernal pools on the mainland and determine the presence of amphibians during the breeding season. Specifically, participate in Regional anuran call count surveys in select vernal pools to document species occurrence, seasonal use, and abundance. Incorporate survey results into GIS database. Surveys will also monitor amphibian use of Refuge impoundments.
- determine the need for more intensive, species-specific monitoring after evaluating the results of anuran call count surveys.

Goal 3: Perpetuate the Biological Diversity and Integrity of Upland Cover Types on the Refuge's Coastal Islands to Sustain High Quality Habitat for Nesting Bald Eagles and Migratory Songbirds and Raptors, and to Protect Rare Plant Sites

Objective 3.1 (Bald Eagle Nesting Sites)

Protect the four active and four historic bald eagle nesting sites and maintain suitable habitat on another 15 islands with stands of mature red spruce/ balsam fir forests to maintain or increase the number of occupied bald eagle nesting territories within the Refuge.

Background: Bald eagles are Federal-listed as threatened by both the Federal government and the State of Maine. Initial threats to the species included environmental contaminants, shooting, habitat loss, and human disturbance at nest sites. Extensive public education efforts and Federal and state legislation have significantly reduced many of these threats (McCullough 1993). The bald eagle population in Maine has responded to this protection, and the state now supports over 275 pairs of eagles. However, MDIFW has identified permanent protection of eagle nesting areas as the top prior-

ity for the future recovery of this species in Maine. Bald eagles are actively nesting on Mink, Bois Bubert, Outer Heron, and Little Marshall islands and have historically nested on Sally, Cross, Double Head Shot, and Schoppee islands. One additional pair of eagles nests within the Gouldsboro Bay Division.

Within Maine, mature red spruce/balsam fir-dominated stands close to foraging habitats are considered preferred nesting habitat. Eagles have also nested in large hardwood or white pine trees that are dominant in the tree canopy. During the nesting season eagles are often sensitive to disturbance and will typically nest in areas with minimal human activity (Stalmaster 1987). If disturbed, adult bald eagles may flush from their nest leaving eggs and young chicks exposed to inclement weather (heat or cold) or susceptible to predation.

Strategies:

- continue to implement seasonal public access restrictions annually on the four active and four historic bald eagle nesting sites: historic eagle nesting islands are closed from Feb. 15 to May 15; active eagle nesting islands (or portions thereof) are closed from Feb. 15 to August 31.
- continue to evaluate annually the reproductive performance of eagles nesting within the Refuge and compare to statewide average; if possible, determine causes of decreased productivity and evaluate whether management actions are warranted.
- continue to evaluate annually all future land acquisition for potential to provide nesting habitat for bald eagles. Any additional bald eagle nest sites acquired in the future by the Service would receive the same level of protection as current Refuge islands.
- continue to support MDIFW's annual efforts to monitor occupancy and productivity at all bald eagle nest sites.

Objective 3.2 (Mature Red Spruce-Balsam Fir)

Maintain mature red spruce/balsam fir stands on Refuge islands, in particular, the 734 acres on Bois Bubert Island and 1,248 acres on Cross Island to provide nesting habitat for landbirds of high conservation priority within PIF Area 28 such as bay-breasted warbler, Cape May warbler, and spruce grouse.

Background: See Objective 1.3

Strategies:

Within 5 years of CCP implementation:

- in HMP, include strategies to manage these forest stands to minimize fragmentation and provide the best mix of forest age class and structural diversity to benefit priority nesting birds across the landscape. Consider



Cape May Warbler
USFWS photo

the most appropriate management of age classes given the surrounding land ownership and management and what refuge lands can uniquely sustain over time. Utilize vegetative treatments such as mechanical, biological, chemical and prescribed fire, where appropriate, to manage desirable vegetation and to control invasive and exotic plants. Refine objectives as needed with new information and the revised cover type mapping.

- use landbird survey data collected on the mainland divisions, and Breeding Bird Survey data collected on Cross Island, to evaluate relationship of PIF priority species to stand characteristics such as stand age and stand structure.
- update the cover type maps for Cross and Bois Bubert islands in digital form for use in habitat planning.
- participate in the Atlantic Northern Forest Bird Conservation Region Planning efforts, the PIF Working Group, and other regional landscape-scale efforts to review and evaluate the Refuge's contribution to the habitat and population objectives identified in regional, state, PIF, and species-specific plans. Update HMP as needed.
- in HSIMP, include monitoring for exotic and invasive vegetation on an annual basis.
- hire a Wildlife Biologist (GS 9; same position as Objective 1.1)

Objective 3.3 (Early Successional Forest/Edge)

Manage early successional forest/edge habitat dominated by species such as alder (*Alnus spp*) and cherry (*Prunus spp*) approximately 2-10' tall on Refuge islands, including the 320 acres on Bois Bubert Island, to provide nesting habitat for landbirds of high conservation priority within PIF Area 28 such as chestnut-sided warbler, American woodcock, and olive-sided flycatcher.

Background: See Objective 1.4.

Strategies:

Within 5 years of CCP implementation:

- in HMP, include strategies for managing early succession forest/edge field habitats to provide the best mix of structural diversity to benefit nesting and migratory birds. Consider the most appropriate management of age classes given the surrounding land ownership and management and what refuge lands can uniquely sustain over time. Utilize vegetative treatments such as mechanical, vegetation and to control invasive and exotic plants. Refine objectives as needed with new information and the revised cover type mapping.

- participate in the Atlantic Northern Forest Bird Conservation Region Planning efforts, the PIF Working Group, and other regional landscape-scale efforts to review and evaluate the Refuge's contribution to the habitat and population objectives identified in regional, state, PIF, and species-specific plans. Update HMP as needed.
- in HSIMP, consider the effects of deer browsing and incorporate a deer monitoring strategy if warranted. Include monitoring for exotic and invasive vegetation on an annual basis.
- hire a Wildlife Biologist (GS 9; same position as Objective 1.1)

Objective 3.4 (Migratory Landbirds)

Within 3 years of CCP approval, begin to evaluate at least three Refuge islands per year during spring (May and June) and fall (August to October) to determine their value to migratory landbirds of concern (e.g. black-throated blue, Canada, bay-breasted, and Cape May warblers, and raptors) to serve as a basis for future management decisions.

Background: Recent information indicates that coastal islands may play a key role in providing Neotropical migratory land birds with the optimal variety of prey items which are necessary to complete their migration (R. Suomala pers. comm.). Seabird researchers working on coastal islands have documented significant numbers and species of Neotropical migrants, including raptors using the islands during spring migration. Refuge specific information is not available for the fall. However, limited studies contracted by the Refuge indicate that a considerable number of raptors utilize off-shore islands as foraging areas during their fall migrations (Drury and Goodhue 1998). Survey efforts will be coordinated with those identified in objective 4.4.

Strategies:

Within 5 years of CCP implementation:

- evaluate opportunities to cooperate in ongoing University of New Hampshire study to determine foraging habitat preferences of migratory songbirds.
- implement Regional land bird inventory protocol to monitor spring (May and June) and fall (August to October) migratory bird use of Refuge islands.
- conduct spring and fall migratory Neotropical landbirds and raptor monitoring on at least three Refuge islands as necessary to determine their use of coastal habitats; utilize seabird management crews to survey between May-early August. Hire additional seasonal staff to conduct migratory raptor surveys during August-October.

Within 5 -10 years of CCP implementation:

- complete cover type mapping for island habitats; update HMP as needed.
- evaluate monitoring data to determine habitat characteristics preferred by these species and whether active management is warranted; revise or update objectives in HMP as needed.

Objective 3.5 (Baseline Biological Inventories)

Within 2 years of CCP approval, begin to complete botanical and wildlife evaluations on at least six Refuge islands per year to identify species of concern and to provide a baseline for making future management decisions.

Background: Few complete biological inventories have been conducted on offshore Maine islands, but we suspect there are many rare or unique species inhabiting them. Plants and animals living in the Gulf of Maine are uniquely adapted to cold water currents, the prevalence of fog in summer, and strong cold winds that typically occur off the Maine coast (Conkling 1999). Along the outer islands, this results in harsh environmental conditions similar to those in more Arctic or boreal regions. These conditions, which frequently are too harsh for some plants found on the mainland, give rise to a group of boreal species of plants that typically exist much farther north (Mittelhauser and Morrison 2000).

To date, botanical and wildlife inventories of Refuge islands have been completed for Libby, Johns, Eastern Brothers, Halifax, Petit Manan, and Upper Flag islands. A preliminary inventory of the Cross Island wetlands has also been completed. Bois Bubert has a cover type map completed. Future inventories will include a description of plant and resident wildlife species composition and relative abundance, GPS locations of sensitive plant and wildlife species habitats, locations of invasive or exotic species, and known or potential threats to the island's biological diversity.

Invasive plants are not presently a huge threat, but we will need to be vigilant so they do not become one. For example, we are controlling the population of invasive dodder (*Cuscuta spp.*) on Petit Manan Island where it has been found across the island. In some years the vine flourishes, forming a thick tangled mat, which may limit mobility of young tern chicks. We have mechanically removed the plant after the nesting season, and prior to seed production. Purple loosestrife (*Lythrum salicaria*) is also known to occur on Smuttynose Island. Our long-term goal of this program will be to identify invasive plant locations through these surveys, so we can immediately begin control where needed.



Buttercup
USFWS photo

Strategies:

Within 5 years of CCP implementation:

- establish protocol to conduct baseline vegetation and wildlife inventories on at least six Refuge islands per year. Efforts will continue until all Refuge islands have been inventoried. Consider use of contractors or initiate cooperative efforts with universities to conduct surveys. All survey information would be stored in a GIS database.
- conduct literature search to determine historical surveys conducted on, or adjacent to, Refuge islands.
- update HMP as needed using information obtained from inventories and develop strategies to insure resources of concern are protected.
- in HSIMP, include monitoring for exotic and invasive vegetation on an annual basis. Utilize vegetative treatments such as mechanical, chemical, biological, and prescribed fire to control exotic and invasive plants.
- complete digital cover type mapping for all forested Refuge islands.

Objective 3.6 (Rare Plant Communities)

Manage known rare plant populations on Refuge islands and mainland to insure these populations remain viable and contribute to the natural botanical diversity of the area.

Background: Botanical surveys to date have identified numerous rare plant populations on islands within the Refuge. These include Cross Island: livid sedge (*Carex livida*) and Coast blite goosefoot (*Chenopodium rubrum*); Eastern Brothers: northern yarrow (*Achillea millefolium*); Libby Island: saltmarsh sedge (*Carex recta*), bird's eye primrose (*Primula laurentiana*), and northern yarrow; Bois Bubert: Bird's eye primrose and Nova Scotia false-foxglove (*Agalinis neoscotia*); Halifax Island: northern yarrow; John's Island: sea-beach sedge (*Carex silicea*); Upper Flag Pitseed goosefoot (*Chenopodium berlandieri* var. *macrocalycium*). In addition, two rare plant communities have been identified on Refuge islands: maritime slope bog and jack pine woodland. These areas provide a unique and important contribution to the ecological diversity of the area. In particular, the 28-acre jack pine woodland on Bois Bubert Island is only one of eight in the state (Elliott, 1999). Jack pine regenerates best through fire, which con-

sumes the organic matter and exposes a more suitable seedbed of mineral soil (Maine NAP, 1983).

See Appendix B for The Nature Conservancy and Maine Natural Areas ranking of each species.

Strategies:

Within 5 years of CCP implementation:

- conduct literature search and consult experts regarding life history requirements.
- review baseline biological inventory information collected each year (See Objective 3.6) for occurrences of rare plants.
- annually coordinate all survey and management efforts with Maine Natural Areas Program (NAP).
- in HMP, include strategies to manage the health and productivity of these island rare plant populations and communities. Encourage research studies on the viability and persistence of these rare plant populations, emphasizing patterns of reproductive success and limitations imposed by rare plant habitats. Consider use of exclosures if sheep could be impacting rare plants. Also, consider restricting public access in sensitive areas. Utilize vegetative treatments such as mechanical, biological, chemical and prescribed fire, where appropriate, to manage desirable vegetation and to control invasive and exotic plants. Refine objectives as needed with new information and the revised cover type mapping.
- Up to 110 acres could be prescribed burned in any given year to achieve this and other habitat objectives. Consult with Regional Fire Management Officer when developing prescribed fire management prescriptions.
- in HSIMP, incorporate a deer monitoring strategy if warranted. Include monitoring for exotic and invasive vegetation on an annual basis. Determine survey protocol to locate additional rare plant communities.
- visit all known rare plant sites; locate with GPS; map abundance, density and distributions; identify threats, including non-native and invasive species; establish a GIS database for inventory information; and incorporate new information into the HMP.

Goal 4: Protect the High Quality Wetland Habitats on the Refuge's Coastal Islands to Benefit Nesting and Migrating Shorebirds and Waterfowl

Objective 4.1 (Coastal Saltmarsh - Cross Island)

Protect the 15 acres of coastal saltmarsh on Cross Island to sustain its high quality and natural function and to provide breeding habitat for species of conservation concern such as Nelson's sharp-tailed sparrow, American black duck (breeding and wintering), and northern harrier (wintering and foraging).

Background: See Objective 2.1

*Strategies:**Within 5 years of CCP implementation:*

- in HMP, include strategies to maintain high quality saltmarsh habitat over time. Identify and evaluate threats to the saltmarsh. Utilize vegetative treatments such as mechanical, biological, chemical and prescribed fire, where appropriate, to manage desirable vegetation and to control invasive and exotic plants. Refine objectives as needed with new information and the revised cover type mapping.
- conduct sharp-tailed sparrow surveys according to Regional protocol.
- utilize the Global Programme Action Coalition (USGS) protocol to monitor and evaluate saltmarsh quality and natural function; beginning in 2006, monitor the area every five years.
- participate on the PIF Working Group and other regional landscape-scale efforts to review and evaluate the Refuge's contribution to the habitat and population objectives identified in regional, state, PIF, and species-specific plans. Update HMP as needed.
- in HSIMP, include monitoring for exotic and invasive vegetation on an annual basis.

Objective 4.2 (Intertidal Harvesting)

Within 1 year of CCP approval, initiate efforts to determine the effects on Federal trust resources from intertidal resource harvesting (e.g. blue mussels, blood worms, and periwinkles) on or adjacent to Refuge islands. In particular, evaluate reductions in foraging habitat for common eider and migrating shorebirds such as black-bellied plover, red knot, sanderling and least sandpiper, and disturbance to island nesting species (i.e. terns, common eider, Atlantic puffin, bald eagles) during the nesting season.

Background: The intertidal areas surrounding Refuge islands are open to commercial harvesting of invertebrates under the Colonial Ordinance of 1641-1647. Similar harvesting activities also occur adjacent to Refuge mainland properties. At this point in time, we have no means or methods to document the level of harvest, or even document the number of harvester visits to an island. However, the significance of amphipods and periwinkles (*Littorina spp.*) to eider ducklings has been well-documented (Mawhinney 1999). In addition, many harvesters visit the seabird islands during critical nesting periods, frequently causing the nesting birds to flush from their nests. In some instances, harvesters have landed on nesting islands and allowed their dogs to roam the island while they harvest the intertidal area.

Intertidal habitat surrounding coastal islands are also important foraging areas for tens of thousands of migrating shorebirds each season. It is unknown whether present or future harvest levels of invertebrates may adversely affect the availability of these critical forage items to the shorebirds.



Common eider hen
USFWS photo

Any reduction in food base may reduce the birds' fitness as they migrate south for the winter. The United States Shorebird Conservation Plan (Brown, Hickey, and Harrington 2000) identifies the need to determine population-limiting factors as the most critical need in the conservation of shorebirds.

In the past, rockweed harvesting has been a resource concern for many of the same reasons identified above for invertebrate harvesting. However, in 2001 the Federal regulation prohibiting taking plants on Federal lands, including rockweed, was provided to all licensed rockweed harvesters. This activity is now a law enforcement issue and will be monitored closely by our staff.

Strategies:

Within 5 years of CCP implementation:

- coordinate with Maine Dept. of Marine Resources, Moosehorn and Rachel Carson refuges, U.S. Geological Services (USGS), and the University of Maine to establish and initiate monitoring protocols to measure impacts from human disturbance and loss of forage to nesting and migratory species of conservation concern.
- hire a Marine Ecologist (GS 11).
- coordinate with commercial harvesters to identify harvest areas and level of take.
- as cooperative research opportunities arise, conduct food habitat studies for trust species of concern affected by intertidal harvesting.

Objective 4.3 (Aquaculture Facilities)

Within 1 year of CCP approval, initiate efforts to determine the effects of present and proposed commercial aquaculture facilities in the waters adjacent to Refuge islands supporting nesting seabirds, wading birds, bald eagles, and waterfowl.

Background: Within Maine, several aquaculture facilities have been developed in the waters adjacent to islands supporting nesting bald eagles. Information gathered to date indicates that with sufficient screening and adequate distance between nest sites and fish pens, eagles and aquaculture can co-exist (USFWS 1997). On several occasions, however, regulators have permitted aquaculture development close to bald eagle nesting islands and some of these have since experienced reduced productivity rates or site abandonment (Todd, pers. com. 2004).

We are unsure if there is a direct cause and effect on species of concern since no wildlife studies have been conducted in Maine prior to site development to establish a baseline. A study by Norm Famous evaluated wildlife response to aquaculture facilities, but the study was initiated after the site was developed and there was no pre-development data collected (Famous 1991). Therefore, it is difficult to assess true impacts, if any, of the facilities' development and operation on nesting birds and other wildlife. The general concerns raised by the conservation agencies include: disturbance to birds nesting on adjacent islands, loss of foraging habitat for nesting and wintering birds, entanglement, and attraction of predators (e.g. gulls and herons).



Aquaculture pens near Cross Island
USFWS photo

Research on this issue in British Columbia concluded that increasing numbers of aquaculture facilities in an area important to breeding seabirds can have deleterious effects on these populations in the long term (Booth and Rueggeberg 1989). They found this to be particularly true if sites are developed in proximity to species that have a limited number of large colonies, make intensive use of the surrounding area for foraging, and for which there are few alternate breeding areas available (e.g. terns and alcids). More information is needed to determine if there is a direct impact on nesting seabirds near Refuge lands.

Strategies:

Within 5 years of CCP implementation:

- coordinate annually with conservation partners including: Maine Dept. of Marine Resources, Army Corps of Engineers, MDIFW, NPS, Gulf of Maine Council, Natural Resource Council of Maine, Conservation Law Foundation, and USFWS-Ecological Services Maine Field Office to share information and concerns.
- develop and implement monitoring program with MDIFW, USGS, Maine Dept of Marine Resources, Army Corps of Engineers, University of ME Cooperative Education Unit, USGS, and aquaculture industry to measure whether or not the facilities have a negative impact on nesting birds of conservation concern. For example, determine whether birds are flushed from nests more frequently, birds are entangled in nets, or predators are attracted to the area. Also, establish baseline data to collect prior to new aquaculture developments near Refuge islands so a pre- and post-evaluation can be done.
- hire a Marine Ecologist (GS 11; same position as Objective 4.2).

Within 5-10 years of CCP implementation:

- work with aquaculture industry to minimize potential adverse effects of future aquaculture projects, including site location, cage design, stocking levels and fish age, netting characteristics, and project initiation intervals.

Objective 4.4 (Fall Shorebird Migration)

Within 5 years of CCP approval, evaluate at least three Refuge islands per year during fall migration (July to October) to determine the value of these islands to migratory shorebirds of concern such as red knot, black-bellied plover, piping plover, and whimbrel.

Background: The 1995 International Shorebird Survey Report identified several shorebird species which occur during fall migration on the Refuge and are in decline in our Northeast Region. These species include: black-bellied plover, whimbrel, semipalmated plover, red knot, sanderling, least sandpiper, purple sandpiper, and short-billed dowitcher. In addition, we suspect the Federal-listed threatened piping plover utilizes refuge lands since it nests north of the Refuge. Initial efforts to monitor shorebird use of coastal islands has indicated that these habitats may provide significant feeding and roosting habitats for large numbers of birds passing through during fall migration.

Strategies:

Within 5 years of CCP implementation:

- in conjunction with efforts identified in Objective 3.4, use seasonal contractors to conduct migratory shorebird monitoring on at least 3 Refuge islands per year determine shorebird use of habitats; utilize seabird management crews to monitor between May and early August. Surveys will also be initiated on appropriate mainland habitat.
- coordinate selection of shorebird monitoring sites and protocols used with national and regional efforts, including PRISM.
- complete cover type mapping for Refuge island habitats; update HMP as needed.

Within 5 -10 years of CCP implementation:

- evaluate monitoring data to determine habitat characteristics and dietary items preferred by shorebirds and whether active management is warranted; revise or update objectives in HMP as needed.

Objective 4.5 (Winter Shorebird Surveys)

Within 1 year of CCP approval, initiate survey efforts on at least three Refuge islands per year to determine use by wintering purple sandpipers.

Background: The purple sandpiper breeds in high northern latitudes and winters further north than any other shorebird. During winter months, they



Purple sandpiper banding

typically occur along wave-exposed rocky shores where they feed on amphipods, mollusks, and other intertidal invertebrates. The offshore habitats along the northeast Atlantic have been identified as extremely important to the survival of wintering purple sandpipers in the Western Hemisphere (Brown et. al. 2000). In addition, the North Atlantic Regional Shorebird Plan has identified as a high priority the need to identify and protect purple sandpiper winter habitats along the east coast (Clark and Niles 2000). Maine may play a significant role in providing winter habitat, as recent surveys indicate that approximately 33% of the eastern North American population of purple sandpipers winters off the coast of Maine.

Strategies:

- continue to conduct annual winter shorebird surveys in conjunction with harlequin duck surveys.

Within 5 years of CCP implementation:

- in cooperation with MDIFW, Acadia National Park (ANP), and the University of Maine, initiate boat surveys of coastal islands between the months of November and May to determine distribution and abundance of purple sandpipers; coordinate selection of shorebird monitoring sites and protocols used with national and regional efforts, including PRISM.
- cooperate in MDIFW and ANP efforts to capture and band purple sandpipers to facilitate monitoring movement among the islands used throughout the winter, and breeding areas.
- hire a Marine Ecologist (GS 11; same position as Objective 4.2)

Within 5-10 years of CCP implementation:

- by 2012, evaluate monitoring data to determine habitat characteristics preferred by purple sandpipers and whether active management is warranted; revise or update objectives in HMP as needed.

Goal 5: Protect and Restore Nesting Seabird Populations on the Refuge's Coastal Islands to Contribute to Regional and International Seabird Conservation Goals

Seabird Nesting Islands with Active Restoration

Objective 5.1 (Common and Arctic Tern)

Within the context of regional population goals identified in the Gulf of Maine Regional Tern Plan (USFWS 2002), increase the number of nesting pairs of Arctic and common terns (using the 2000 nesting season population estimates as a baseline), and achieve and maintain a productivity level of 1.0 fledged chick/nesting pair, on the six Refuge islands with active

seabird restoration projects: Petit Manan, Ship, Metinic, Seal, Pond and Matinicus Rock islands.

Background: Arctic and common tern populations were decimated in the Gulf of Maine in the late 1800's due to a combination of shooting and eggging for food and bait, and feather collection for the millinery trade. Conservation legislation passed in the early 1900's provided protection from human persecution, but expanding gull populations soon caused tern numbers to again decrease significantly. By 1977, tern numbers in the Gulf of Maine had decreased to only 5,321 pairs from a previous high of just over 12,000 in 1940. Within the Gulf of Maine, the number of islands supporting nesting terns had decreased by half. Cooperative efforts by members of Gulf of Maine Seabird Working Group (GOMSWG) have reversed this decline, and both species are experiencing population growth.

Although recent efforts have tended to focus on population level goals, members of GOMSWG have begun to focus on reproductive parameters (fledgling and recruitment rates) that may indicate overall health of the populations. Researchers have set the productivity level of 1.0 fledged chick/nesting pair as an objective for both tern species. Population estimates for the 2000 nesting season will serve as a baseline for setting future population goals. The population and productivity objectives will be evaluated every five years in cooperation with the GOMSWG.

Predator management is an important part of the restoration effort. The presence of a single mammalian predator (e.g. mink) or avian predator (e.g., great-horned owl, black-crowned night heron, or gull species) on a seabird colony can have disastrous effects on nesting seabirds. Predation can limit the distribution and abundance of breeding seabirds and their reproductive success. The effects of predation will vary depending on the type of predator, seabird species, habitat on the island, and time of year the predator arrives on the island. However the significance of predators is even greater for species limited to a few nesting colonies. Similar efforts may be needed on Refuge islands not currently supporting an active restoration project.

Strategies:

- continue cooperation with NAS and Canadian Wildlife Service; annually census islands for nesting common and Arctic terns; conduct productivity studies to estimate reproductive success; identify factors responsible for reduced productivity levels below the target of 1.0 chick/pair; continue to identify and initiate steps to minimize factors reducing productivity levels.
- continue cooperation with the Mid-Atlantic/New England/Maritimes Waterbird Working Group (MANEM) in setting population objectives for the region.
- continue to actively manage predator populations on an annual basis, using lethal and non-lethal methods to control gulls, owls, and small

mammals. If trapping is necessary, utilize Refuge staff or a contracted local trapper to set and monitor traps throughout the season. Coordinate trapping efforts with MDIFW and utilize best management practices of the International Association of Fish and Wildlife Agencies Technical Committee.

- in cooperation with NAS and MDIFW, continue to annually monitor effectiveness of trapping program and evaluate new and different techniques.
- continue to annually document and evaluate how often and how close tour boats come to nesting islands and the response by seabirds.
- continue to annually meet with tour boat companies prior to the season to discuss best management practices while operating near seabird nesting islands.
- continue to participate in cooperative effort (University of New Brunswick, NAS, and USFWS) to study the Arctic tern metapopulation within the Gulf of Maine.
- continue to annually close alcid, tern, and storm-petrel nesting islands to public visitation between April 1 and August 31.
- continue working with FAA to have Refuge islands identified on Flight Charts so that pilots are alerted to the 2,000 ft.-minimum recommended altitude over a national wildlife refuge.

Within 5 years of CCP implementation:

- in HMP, include strategies to manage for and sustain nesting terns on Petit Manan, Ship, Metinic, Seal, Pond, and Matinicus Rock Islands in cooperation with National Audubon Society. Utilize the Regional Tern Plan (USFWS 2002) to identify characteristics of desirable tern nesting habitat. Consider habitat management tools such as prescribed burning, herbicides, fencing, mowing, and sheep grazing. Evaluate information on sheep grazing collected on Metinic Island. Consider applicability of sheep grazing to other seabird islands after evaluating factors related to grazing seasons, flock size, risk to soils and native vegetation composition. If utilized, sheep grazing will be implemented under a special use permit with controls on flock size, timing, and distribution.
- in HSIMP, evaluate current tern monitoring strategies, in cooperation with NAS.
- also in HSIMP, develop monitoring strategies for exotic and invasive vegetation on an annual basis.
- hire a Marine Ecologist (GS 11; same position as Objective 4.2)

Objective 5.2 (Roseate Tern)

Within the context of regional population goals identified in both the Gulf of Maine Regional Tern Management Plan (USFWS 2002) and the Roseate

Tern Recovery Plan (USFWS 1998), increase the number of roseate terns nesting on the refuge islands (using the 2000 nesting season population estimates as a baseline) and maintain a productivity level of 1.0 fledged chick/nesting pair.

Background: Roseate terns are listed as an endangered species by both the Federal government and the State of Maine. The history of population decimation and recent rebounding is similar to that mentioned above for common and Arctic terns. Currently, there are approximately 286 pairs of roseate terns nesting on five islands in Maine. However, over 95% of the roseate terns are nesting on two non-Service owned islands; Eastern Egg Rock and Stratton Island. Within the Refuge, roseate terns nest on Petit Manan and Seal islands; have historically nested on Metinic, Matinicus Rock, Thrumcap, and Egg Rock; and have attempted nesting on Pond Island. This limited nesting distribution significantly increases the potential for a single catastrophic event to affect a major percentage of the population. The Roseate Tern Recovery Plan (USFWS 1998) has targeted the expansion of the Northeastern U.S. population to over 30 colonies, with six sites supporting at least 200 nesting pairs with high productivity (1.0 fledged chick /pair).

While Arctic and common terns prefer more exposed habitat, roseate terns generally prefer dense vegetation or some form of overhead cover (~ 70% cover). Fortunately, management for roseate terns can usually be accommodated on the same islands managed for common and Arctic terns, despite the differences in nesting habitat. A significant component of a successful seabird program, regardless of species, is predator management.

As with common and Arctic terns, members of GOMSWG have begun to focus on roseate tern reproductive parameters (fledgling rate and recruitment rate) that may indicate overall health of the population. Researchers have set the productivity level of 1.0 fledged chick/nesting pair as an objective for roseate terns; the same objective as common and Arctic terns.

Population estimates for the 2000 nesting season will serve as a baseline for setting future population goals. The population and productivity objectives will be evaluated every five years in cooperation with the Gulf of Maine Seabird Working Group, National Audubon Society, and the Roseate Tern Recovery Team.

While this objective for roseate terns is similar to Objective 5.1 (Common and Arctic Tern), we chose not to combine them because of the roseate tern's endangered status and to maintain flexibility should future recovery plan efforts require new, specific actions for this species.



Roseate tern

Photo courtesy of Bill Silliker, Jr.

Strategies:

- in HSIMP, evaluate monitoring strategies for nesting roseate tern with NAS and recovery team.
- continue to place Federal bands and field readable bands on roseate tern chicks, and read bands on adult terns in cooperation with the USGS roseate tern metapopulation study.
- continue to evaluate roseate tern use of artificial nest boxes on Petit Manan Island.
- continue to map all roseate tern nests using a GPS and incorporate into a GIS database.
- continue to actively manage predators on an annual basis, including lethal and non-lethal methods to control gulls, owls and small mammals. If trapping is necessary, utilize Refuge staff or a contracted local trapper to set and monitor traps throughout the season.
- in cooperation with National Audubon Society, continue to annually monitor effectiveness of trapping program and evaluate new and different techniques.
- continue to annually close alcid, tern, and storm-petrel nesting islands to public visitation between April 1 and August 31.
- continue to annually document and evaluate how often and how close tour boats come to nesting islands and the response by seabirds.
- continue to annually meet with tour boat companies prior to the season to discuss Best Management Practices.

Within 5 years of CCP implementation:

- begin to evaluate the effects of experimental habitat alteration designed to attract nesting terns and monitor microhabitats of nesting locations.
- in HMP, include strategies to manage for and sustain nesting by roseate terns on Petit Manan and Seal Islands, and establish nesting on Pond Island. Utilize the Regional Tern Plan (USFWS 2002) to identify characteristics of desirable tern nesting habitat. Develop management strategies in cooperation with National Audubon Society. Consider habitat management tools such as prescribed burning, herbicides, fencing, mowing, and sheep grazing. Evaluate information on sheep grazing collected on Metinic Island. Consider applicability of sheep grazing to other seabird islands after considering factors related to grazing seasons, flock size, risk to soils and native vegetation composition. If utilized, sheep grazing will be implemented under a special use permit with controls on flock size, timing, and distribution.
- in HSIMP, evaluate implementation, with NAS and the Roseate Tern Recovery Team, the monitoring strategies cooperatively developed for nesting roseate terns on the Refuge.

- also in HSIMP, develop monitoring strategies for exotic and invasive vegetation on an annual basis.
- annually coordinate efforts with Roseate Tern Recovery Team.

Objective 5.3 (Alcids)

Within the context of MDIFW Species Assessment (MDIFW 2000) population goals, increase the number of active alcid colonies on Refuge islands; increase the number of breeding pairs of Atlantic puffins and razorbills by 50% (using the 2000 nesting season population estimates as a baseline); and maintain a minimum productivity level of 0.5 fledged chicks/nesting pair.

Background: Maine represents the southern extent of the breeding range for alcids, including Atlantic puffins, razorbills, and black guillemots, in the North Atlantic. Atlantic puffins and razorbills are listed as threatened species by the State of Maine, due to small population size and because their breeding distribution is limited to four or five islands (85% of the birds nest on two Refuge islands). During the 2002 breeding season, Maine supported 450 pairs of puffins, 310 pairs of razorbills, and 12,273 pairs of black guillemots (MDIFW 2002).

In 1901, after decades of hunting, only one pair of puffins nested south of the Canadian border. This pair was located on the Refuge island known as Matinicus Rock. In the presence of gull control, Matinicus Rock continued to support a small population of breeding puffins. Survey results indicate that the 75 pairs of puffins on Matinicus Rock in early 1980’s were the only puffins breeding in Maine (S. Hall NAS pers. com.).

In an effort to enhance the recovery of this population, NAS and the Service initiated a puffin chick relocation project where young birds were brought from Newfoundland to Maine. This translocation effort is thought to have significantly enhanced the population growth rate and colony establishment for puffins in Maine. Puffins currently nest on three islands within the Refuge: Petit Manan, Seal, and Matinicus Rock

Records from the early 1900’s indicate that razorbills no longer bred in the Gulf of Maine. Razorbills currently nest on three islands within the Refuge: Old Man and Seal islands, and Matinicus Rock.

MDIFW completed a Species Assessment for puffins and razorbills (MDIFW 1999) in which they identified the need to increase both the size of the breeding populations and increase the geographic distribution and number of colonies.

Strategies:

- continue to conduct daily censuses of black guillemots, Atlantic puffins and razorbills on or



Razorbills
USFWS photo

adjacent to Petit Manan, Seal, and Matinicus Rock islands each year during the nesting season.

- continue to monitor productivity at 25 active puffin burrows on Seal and Matinicus Rock islands each year during the nesting season.
- continue to observe and record food deliveries to individual burrows to help determine reproductive success each year during the nesting season.
- continue to band adults and chicks where possible each year during the nesting season.



Black guillemot
USFWS photo

- continue to cooperate in the graduate study of Atlantic puffin survival and recruitment (Breton et al.) with NAS and University of New Brunswick by banding as many adult and juvenile puffins and reading as many bands as possible on birds returning to the islands.

- continue to annually close alcid, tern, and storm-petrel nesting islands to public visitation between April 1 and August 31.

- on Petit Manan Island, continue to map all active puffin and, if appropriate, razorbill burrows using GPS and incorporate into a GIS database.

- on Petit Manan Island, evaluate puffin and razorbill use of artificial burrows. On an annual basis, evaluate need to continue providing burrows and whether to expand efforts to new locations on island.

- continue to annually document and evaluate how often and how close tour boats come to nesting islands and the response by seabirds.

- continue to annually meet with tour boat companies prior to the season to discuss Best Management Practices when operating adjacent to seabird nesting islands.

- evaluate current and future Refuge islands for suitability as restoration sites. Develop management plans for selected islands including: predator control needs, staffing and equipment needs, logistical concerns, use of social attraction equipment, and habitat alteration considerations.

Within 5 years of CCP implementation:

- purchase at least one burrow scope to assist in determining productivity in individual burrows. Additional scopes will be purchased as funds become available.

- in HMP, include strategies to manage for and sustain nesting by alcids. Utilize MDIFW Species Assessment Plans to identify characteristics of desirable alcid nesting habitat. Develop management strategies in cooperation with NAS.
- in HSIMP, evaluate monitoring protocol for alcids nesting within the Refuge in cooperation with NAS.
- initiate alcid management effort on at least one Refuge island. Make effort to select an island that will provide nesting habitat for both puffins and razorbills. Coordinate with MDIFW and NAS. Purchase social attraction equipment (e.g., sound system and decoys) as needed.
- hire a Marine Ecologist (GS 11, same position as Objective 4.2).
- hire a Wildlife Biologist (GS 11).

Within 5-10 years of CCP implementation:

- initiate other alcid management projects (up to five) on Refuge islands.

Objective 5.4 (Laughing Gulls)

Reduce, or redistribute where possible, the number of laughing gull pairs nesting on Refuge islands (based on 2000 inventories) in an effort to minimize competition with, and predation on, common, Arctic, and roseate terns.

Background: Currently, laughing gulls nest on three islands within Maine, two of which are Refuge islands: Petit Manan Island and Matinicus Rock. The third island currently supporting nesting laughing gulls is MDIFW owned Eastern Egg Rock. These colonies represent the northern extreme of laughing gull breeding range in the United States, and they are listed as a species of special concern in Maine.

In recent years on Petit Manan Island, laughing gulls have experienced considerable population growth (175% in 10 years) and colony expansion. We documented 794 laughing gull nests on Petit Manan Island during the 2000 nesting season, and 961 nests during the 2001 season. Our staff and GOMSWG members are concerned that the gulls act as competitors with the terns for limited nesting space, directly prey on the terns and their eggs, and steal food from the terns.

In an effort to limit the number of laughing gulls nesting on Petit Manan Island in 2002, we created a “gull free” area on the island. This was accomplished by removing all laughing gull nests on the northern and eastern sides of the island. Our effort was not directed at eliminating laughing gulls as a breeding component of Petit Manan Island, but simply to manage the population growth and productivity of the gull colony. Productivity studies conducted on the tern colony in 2002 indicated that Arctic terns experienced significantly higher levels of productivity, as compared to recent years. NAS also carried out a similar control effort on Eastern Egg Rock.

Strategies:

- continue to cooperate with NAS and annually monitor Matinicus Rock and Petit Manan for nesting laughing gulls; map their distribution using GPS; determine their numbers and density; and document laughing gull kleptoparasitism and predation rates on terns. Incorporate all data into a GIS database.
- on Petit Manan Island, continue to confine the laughing gull nesting area to approximately five acres of the island (west of the boardwalk); utilize results of earlier experiments and consider other habitat manipulations or lethal removal of birds or eggs. Results of gull control efforts and corresponding tern productivity levels will be reviewed annually by Refuge staff and members of GOMSWG.



Laughing gulls
Photo by Craig Snapp

- continue to determine the effectiveness of experimental habitat alteration on laughing gull nesting distribution and density on Petit Manan Island.
- continue to annually evaluate other techniques to manage distribution and reduce laughing gull populations on Refuge islands when they are determined to be harming the productivity objectives for other seabirds of concern. Lethal controls would be considered if non-lethal techniques are ineffective.
- continue to annually close alcid, tern, and storm-petrel nesting islands to public visitation between April 1 and August 31.

Within 5 years of CCP implementation:

- in HMP, include strategies to manage laughing gull populations consistent with other seabird objectives. Develop strategies in cooperation with NAS and MDIFW. Consider habitat management tools such as prescribed burning, herbicides, fencing, mowing, and sheep grazing. Lethal controls, such as shooting and avicides would be used if non-lethal methods are ineffective.
- in HSIMP, in cooperation with NAS, evaluate protocol and continue monitoring laughing gulls nesting within the Refuge; include monitoring for exotic and invasive vegetation on an annual basis.

Objective 5.5 (Herring and Black-backed Gulls)

Control herring and great black-backed gulls nesting on Petit Manan, Ship, Pond, and Matinicus Rock islands and maintain selected areas of Seal (25 acres) and Metinic (15 acres) islands as “gull-free” areas, to minimize inter-specific competition and predation on common, Arctic, and roseate terns; puffins; razorbills, and common eiders.

Background: Expanding gull populations and habitat loss along the coast of Maine were responsible for wide-scale population declines in many seabird populations during the first half of the century. The prevalence of open landfills along the coast allowed herring and great black-backed gulls to produce a greater number of chicks. These gull chicks also experienced a greater survival rate due to the abundance of food during the winter months. Both species are effective predators of tern eggs and young, and their presence can lead to complete nesting failure or island abandonment by many species of seabirds. Gulls also initiate nesting earlier in the season than terns, forcing the terns to nest in marginal habitat. As a result, terns may be more vulnerable to increased predation, inclement weather, and tides. Gull control efforts on our managed islands have proven to be very successful. As a result, over 90% of the common, Arctic, and roseate terns, and all puffins and laughing gulls nesting within Maine nest on islands where gull populations are actively managed.

Strategies:

- continue to conduct daily censuses of nesting and loafing gulls on all six managed islands.
- continue to dissuade nesting and loafing gulls by maintaining a human presence throughout the nesting season on all six managed islands; remove all gulls determined to be preying on the terns or alcids using lethal and non-lethal techniques as warranted. Techniques include harrassment, destruction of nests and eggs, shooting and limited use of avicides. Continue to monitor gull colony at Green Island to determine whether these birds are contributing to predation on Petit Manan Island.
- continue to cooperate with MDIFW and USGS in documenting presence and activities of color banded gulls on Petit Manan Island.

Within 5 years of CCP implementation:

- in HMP, include strategies to manage herring and black-backed gull populations consistent with objectives for other seabirds of concern.
- in HSIMP, include method of monitoring herring and black-backed gull populations to insure other objectives for seabirds of concern can be met.
- initiate gull control efforts on future restoration sites, on an as-needed basis.

Objective 5.6 (Common Murre)

Establish and sustain a nesting colony of common murre on Matinicus Rock to contribute to the conservation of natural seabird diversity in the Gulf of Maine.

Background: Although common murres are known to breed throughout eastern Canada, no nesting attempts have been documented within Maine during the past century. However, records from the mid- 1800's indicate that murres did breed on at least one island in outer Penobscot Bay (Scott Hall NAS pers. com.). Like many other seabird species, the murre was nearly decimated by over-harvesting throughout much of the 20th century (Gaston and Jones 1998). We will continue working with NAS to utilize social attraction equipment (sound system and decoys) to re-establish a murre nesting colony in Maine. At present, our efforts are focused on Matinicus Rock, but murre routinely visit Seal and Petit Manan islands and we are monitoring this activity. Unfortunately, efforts to encourage birds to establish nesting colonies outside their current breeding areas has proven to be more difficult than establishing a new colony within an already occupied region.



Murre decoys
USFWS photo

Strategies:

- continue to utilize “social attraction” methods in cooperation with National Audubon Society to attract common murres to Matinicus Rock; sound system broadcasting murre calls and murre decoys are set up each nesting season in early May.
- continue to annually close alcid, tern, and storm-petrel nesting islands to public visitation between April 1 and August 31.
- continue to utilize seasonal staff to monitor common murre use of Refuge islands throughout the nesting season.

Within 5 years of CCP implementation:

- in HMP, incorporate strategies to manage common murres and minimize threats to nesting habitat.
- in HSIMP, work with NAS to develop monitoring strategy for common murres.
- evaluate potential to set up social attraction equipment to encourage murres to nest on additional Refuge islands.

Objective 5.7 (Leach's Storm-Petrel)

Within the context of MDIFW Species Assessment population goals (MDIFW 2000) maintain or increase the nesting populations of Leach's storm-petrels nesting on Refuge islands (using 2000 data as a baseline) and maintain a productivity level of 0.5 fledged chick/nesting pair.

Background: GOMSWG data indicates that Leach's storm-petrels are currently nesting on approximately 35 islands in Maine, with 17 of those islands being part of the Refuge. Within the United States, only two other breeding colonies are known to exist outside of the State of Maine (Penikese Island and Nomans Land Island NWR, Massachusetts) (MDIFW 1999).

Leach's storm-petrels are burrow-nesters and are active at the breeding colonies only during the evening hours, making surveys difficult. MDIFW Species Assessment for Leach's storm-petrel (1999) has identified the lack of offshore islands with suitable soil conditions for burrowing, predation, disturbance from human activities, and habitat degradation as the most important factors limiting distribution, abundance, and productivity of these seabirds.

Strategies:

- continue to cooperate with National Audubon Society to monitor burrow occupancy of Leach's storm-petrels on Matinicus Rock Island. Each spring during the nesting season, monitor all burrows within the established plots, including documentation of hatching success.
- continue to annually close alcid, tern, and storm-petrel nesting islands to public visitation between April 1 and August 31.

Within 5 years of CCP implementation:

- in HMP, incorporate strategies to manage for Leach's storm-petrel and minimize threats to nesting sites.
- initiate storm-petrel surveys on Refuge islands in conjunction with ongoing baseline biological inventories (Objective 3.6) and seabird surveys (Objective 5.9).
- in HSIMP, develop a standardized census methodology with GOMSWG members; specifically work with MDIFW to develop censusing protocol for Leach's storm-petrel; also establish a program to monitor productivity for Leach's storm-petrel on Petit Manan and Seal islands.
- hire a Wildlife Biologist (GS 11; same position as Objective 5.3).

Objective 5.8 (Common Eider)

Maintain or increase populations of nesting common eiders (using 2000 as the base year) on all Refuge islands, and continue participation in State and regional research and banding efforts

Background: In recent years, concern over the status of sea ducks has risen worldwide, and the Atlantic Northern Forest Bird Conservation Region (BCR) 14 has identified common eider as one of the highest priority waterbirds in the region. Compared to many other species of waterfowl, common eiders are characterized by delayed sexual maturity, small clutch size, low rates of annual recruitment, and high adult survival rates under normal conditions (MDIFW 1999). These characteristics make eiders particularly sensitive to environmental change or to factors influencing adult survival rates. Although many of the variables controlling eider survival and recruitment are not clearly understood, we do know that gull predation particularly that by great black-backed gulls, remains the major cause of mortality among eider ducklings. Research has shown that duckling survival rates are significantly higher in areas where gull numbers are controlled as part of our tern management program. Efforts by Maine Department of Inland Fisheries and Wildlife, U.S. Geological Survey, and the Refuge to investigate common eider survival and recruitment rates in the Gulf of Maine have begun to address these management concerns and research needs.

In recent years, the level of interest in commercial aquaculture development has increased significantly in Maine. In addition, the interest in commercial harvesting of the eiders major prey items: blue mussels, periwinkles, and green sea urchins has also increased in recent years. We do not have sufficient information to effectively evaluate the effects of these commercial activities on breeding, migratory, and wintering seabirds and waterfowl, including eiders.

Strategies:

- continue to annually close to public access the Refuge islands where only common eider and/or gulls are nesting during the period April 1 to July 31
- in cooperation with MDIFW and USGS, continue banding efforts to evaluate survival and recruitment rates, movement rates, and hunting mortality
- initiate standardized surveys of the breeding population that allows population trends to be monitored, but minimizes disturbance to the nesting females
- document significant seasonal distribution of eiders, particularly brood rearing and molting areas
- coordinate with partners in efforts to evaluate significance of commercial harvesting of resources from eider molting and wintering habitats
- coordinate with partners to determine effects of commercial aquaculture development on distribution and feeding rates of eiders.

Objective 5.9 (New Seabird Restoration Projects)

Consistent with Regional seabird population and distribution goals, and Refuge expansion opportunities, increase nesting tern and alcid populations and improve their distribution in the Gulf of Maine by establishing six new seabird restoration projects on Refuge islands.

Background: Expanding gull populations and recent increases in both recreational and developmental pressures along the coast of Maine continue to limit the availability of suitable nesting seabird sites. Over 90% of common, Arctic, and roseate terns, and all laughing gulls and Atlantic puffins in Maine currently nest on nine managed (i.e., seasonally staffed) seabird managed islands. In addition, over 90% of Arctic terns in Maine nest on three Refuge islands (Petit Manan, Matinicus Rock, and Seal), 85% of all puffins in Maine nest on two Refuge islands (Seal and Matinicus Rock), and 95% of the endangered roseate terns in Maine nest on two non-Refuge islands (Eastern Egg Rock and Stratton).

The number and geographic distribution of occupied seabird nesting islands has decreased significantly from historic levels (USFWS 2000). The potential for a single catastrophic event to significantly affect Gulf of Maine seabird populations is enhanced by the formation of large concentrations of seabirds nesting on a limited number of islands.

Unfortunately, we have limited opportunities to expand our restoration program to other Refuge islands currently in Service ownership. Instead, we are looking to expand our intensive management and restoration program with future acquisitions. New management sites are selected utilizing criteria established in the Roseate Tern Recovery Plan (USFWS 1998) and the Regional Tern Management Plan (USFWS 2000). Management activities will also be consistent with MDIFW species assessments for common eiders (MDIFW 2000), Atlantic puffins and razorbills (MDIFW 1999), and Leach's storm-petrel (MDIFW 1999). Depending on the suitability of an island for supporting nesting alcids and terns, management efforts may be coordinated with those outlined in Objectives 5.1, 5.2, and 5.3.

Strategies:

Within 5 years of CCP implementation:

- evaluate current and future Refuge islands for suitability as restoration sites.
- develop at least one restoration plan per year for those islands with potential. Plans will include: predator control needs, staffing and equipment needs, logistical concerns, use of social attraction equipment, ability to increase geographic distribution of colonies, habitat alteration needs, and public use and access restrictions.
- initiate one seabird restoration project on a Refuge island, with subsequent projects initiated every two to three years thereafter.

Increase the number of seasonal crews staffing the islands commensurate with the number of projects.

- establish the public access seasonal closures, similar to existing Refuge islands, from April 1 to August 31.
- update HMP and HSIMP as needed.
- coordinate all efforts on an annual basis with GOMSWG members.
- hire a Wildlife Biologist (GS 11; same position as Objective 5.3).
- hire a Marine Ecologist (GS 11; same position as Objective 4.2).
- purchase new boat (>20') to support management activities on coastal islands.

Seabird Nesting Islands with No Active Restoration

Objective 5.10 (Seabirds)

On the 25 Refuge seabird nesting islands without active seabird restoration projects, maintain nesting populations of common terns, razorbills, black guillemots, common eiders, great cormorants, double-crested cormorants, Leach's storm-petrels, and herring and black-backed gulls (using the 2000 survey season as a baseline) to contribute to state and regional population and distribution goals.

Background: Recent increases in both recreational and developmental use patterns of coastal islands have limited the number of islands that are suitable for nesting seabirds. Increasingly fewer opportunities exist for expanding seabird populations in the Gulf of Maine. Of the 3,500 islands along Maine's coast, seabirds currently utilize approximately 18% of these islands. Gull control efforts utilized by our staff and National Audubon Society are specifically focused on managed seabird islands. No efforts are made to control overall population levels of gulls on any other Refuge islands. Herring and great black-backed gulls contribute to the seabird diversity of the Gulf of Maine, and in fact, the presence of nesting gulls may be a significant reason for island acquisition.

In addition to the six seabird restoration islands currently within the Refuge, 25 additional Refuge islands provide nesting habitat for one or more species of seabird. These islands are infrequently visited by our staff, and statewide surveys have routinely been done by boat and aerial observation. A new survey protocol, initiated in 2001, will require that each seabird nesting island be visited, at a minimum, once every five years during the nesting season.

As previously noted, population and distribution goals for many of these species have been established by the Regional Tern Management Plan (USFWS 2000), the Roseate Tern Recovery Plan (USFWS 1998), and MDIFW Species Assessments for common eiders (MDIFW 2000), Atlantic

puffins and razorbills (MDIFW 1999), and Leach's storm-petrels (MDIFW 1999).

Strategies:

- continue to annually close to public access the Refuge seabird nesting islands from April 1 and August 31. The only exception is those islands with only gull or eider nesting. These will be closed to public access from April 1 to July 31 to conform more closely to State island closures.
- continue to survey five Refuge islands each year using Refuge staff, contractors, or partners to determine whether active management is warranted to maintain suitable nesting habitat; work in cooperation with the National Audubon Society and other partners to develop plans; utilize proven habitat management techniques consistent with other Refuge management projects. Update HMP for the Refuge as needed.
- continue to coordinate all efforts with GOMSWG members on an annual basis.
- continue cooperation with the Mid-Atlantic/New England/Maritimes Waterbird Working Group (MANEM) in setting population objectives for the region.
- continue to coordinate with MDIFW and USGS in the common eider survival study.

Within 5 years of CCP implementation:

- develop a standardized census methodology with GOMSWG members; specifically, work with MDIFW to develop census protocol for Leach's storm-petrel.

Objective 5.11 (Great Cormorant)

Increase the number of great cormorants nesting within the Refuge (based on 2000 inventories) and maintain a productivity level of 1.0 chicks/pair in an effort to maintain seabird diversity within the Gulf of Maine.

Background: The Atlantic Northern Forest Bird Conservation Region (BCR) 14 identified the great cormorant as one of the highest priority waterbird species for this region. Current information indicates that 80% of the North American population of great cormorants nests within this BCR. The total North American population of great cormorants is estimated at 11,600 pairs (Kushlan et.al. 2002). Although only 192 pairs of great cormorants nested in Maine in 2002, they represent the southern extreme of their breeding range. Within Maine, the birds nest on six islands, two are within the refuge; Little Roberts and Seal islands. To date, little information regarding factors that may be limiting population growth are available for Maine.

Strategies:

- continue to annually close seabird nesting islands to public visitation between April 1 and August 31.

Within 5 years of CCP implementation:

- in cooperation with NAS, MDIFW, and contractors initiate annual surveys of breeding colonies to determine population status and productivity rates for each colony.
- in conjunction with winter waterfowl and purple sandpiper surveys, monitor Refuge islands and adjacent waters for wintering great cormorants.
- in HSIMP, include strategies for monitoring great cormorants.

**Goal 6: Provide
Enjoyment and Promote
Stewardship of Coastal
Maine Wildlife and their
Habitats by Providing
Priority, Wildlife-
Dependent Recreational
and Educational
Opportunities**

Objective 6.1 (Environmental Education)

Within 5 years of CCP approval, 25% of school children within 15 miles of each Refuge office will participate in a Refuge environmental education program each year and will identify an action to undertake in their own community to support wildlife conservation.

Background: Environmental education is one of the six priority public uses designated by the Refuge System Improvement Act of 1997. The other five priority uses are hunting, fishing, wildlife observation and photography, and environmental interpretation. These six uses are to receive enhanced consideration in refuge planning and opportunities to engage in these activities should be provided to the extent compatible with Refuge goals and objectives. Educating young people about the significance of Maine’s coastal nesting islands and the Service’s management efforts will foster an appreciation of wildlife conservation and encourage them to make responsible environmental decisions in the future.

We currently have no curriculum-based environmental education program to offer local schools, but would accomplish this in the future through programs offered at the education facility described below. In addition, we would continue to support teachers who wish to lead on-site programs. We would also continue to support the National Audubon Society and Damariscotta River Association’s classroom environmental education programs, while ensuring the Service’s messages on conservation are shared. In addition, we would continue our partnership with the Chewonki Foundation and Hurricane Island Outward Bound School, who have established environmental education programs. We continue to issue a Special Use Permit to the Humboldt Research Station (formerly Eagle Hill Institute) for an “outdoor laboratory” on Refuge lands.

We describe in detail the need to work with partners for a mid-coast education center on the mainland in Chapter 3. In summary, this need is based on the fact that half of the Refuge’s acreage is on offshore islands,

inaccessible to most visitors, except a few islands which are seasonally accessed by tour boats or kayak. These offshore islands are fragile and vulnerable to human use, yet they are globally significant habitats. A mid-coast education center could reach many of the 5.4 million travelers passing through Rockland on U.S. Route 1 each year (MDOT, 2000). It will offer an opportunity for people to learn about these significant habitats, the unique species they support, and our seabird research, management, and restoration goals. The development of this center will dramatically increase our ability to conduct environmental education programs to larger and

more diverse audiences. In addition, it could also serve as a focal point for our outreach and interpretive programs. We have developed a Project Identification Document (June 2002) which describes our concept of this center. We are working with National and Maine Audubon to refine this concept and will further explore partnerships as new ideas and opportunities develop.

A goal of our proposed environmental education program is to get young people to take action in their own communities and to provide them with a foundation for making informed decisions affecting natural resources. With approximately 9,000 students within 15 miles of both Refuge offices, our environmental education programs could reach at least 2,250 students each year.



Environmental education
USFWS photo

Strategies:

Within 5 years of CCP implementation:

- hire one additional Outdoor Recreation Planner (GS-11) to plan, implement, monitor, and evaluate environmental education programs, and other Refuge public use programs. Within one year of hire, develop a monitoring and evaluation protocol to insure Refuge environmental education program is meeting objectives.
- complete a Visitor Service's Plan for the Refuge incorporating strategies identified herein; establish thresholds of acceptable change to resources resulting from public use; develop monitoring strategies to measure changes and to measure achievement of objective, and to evaluate visitor experiences. Modify or restrict access, or adapt management strategies as warranted.
- Evaluate opportunities to provide access on select islands during the nesting season for educational purposes

- establish partnerships with other conservation organizations and schools to conduct field-based environmental education in the Rockland area.
- develop hands-on environmental education activities for teachers to use in classrooms; consider an interactive, computer-based environmental education program about the Refuge and seabird management.
- conduct special environmental education events involving schools to celebrate International Migratory Bird Day and National Wildlife Refuge Week.
- implement annual monitoring protocol to evaluate the quality of the environmental education program.
- hold at least one “Teach the Teacher” workshop annually in the Milbridge area.
- utilize Partners In Flight plans for ideas to incorporate into environmental education programs related to migratory landbird conservation.
- develop an environmental education video about seabird restoration and management for use in the visitor center and schools.
- establish a partnership with NPS, Acadia National Park’s Schoodic facility, to participate in managing a Learning Center which will provide opportunities for Refuge staff to live and work on-site with NPS and other conservation groups.
- create an internship program in conjunction with Unity College or other institutions. Students in the program will work at the Coastal Education Center for a semester. Seek housing for interns and volunteers.
- develop at least one on-site, teacher-led environmental education program on a mainland division.
- in partnership with NAS and ME Audubon, finalize concept and design for a Refuge coastal education center in the mid-coast area along Route 1 that will provide interactive exhibits and staff- and volunteer-led environmental education programs.

Objective 6.2 (Environmental Interpretation)

Within 5 years of CCP approval, 90% of Refuge visitors will be able to name the Service as the agency managing the Refuge and will be able to identify at least one important Refuge habitat type and relate its significance to migratory birds and other native wildlife.

Background: Environmental interpretation is a priority public use identified in the 1997 Refuge Improvement Act and is one of the most important ways we can raise our visibility, convey our mission, and identify the significant contribution the Refuge makes to wildlife conservation. Public understanding of the Service and its activities in the state of Maine is

currently very low. Refuge visitors often confuse our agency with the MDIFW. Many are unaware of the Refuge System and its scope, and most do not understand the importance of the Refuge in the conservation of migratory birds.

Our proposed future programs will achieve our objectives through increased visitor contacts, on-site programs, and new and improved infrastructure. We want people to recognize that the Refuge has a priority to manage a variety of habitats to benefit migratory birds, with particular emphasis on restoring colonies of nesting seabirds. Through an expanded interpretive program, visitors will gain a better understanding of the unique and important contribution of this Refuge to migratory birds. Maps 4-1 to 4-4 depict new infrastructure to support this program.

Strategies:

- continue to allow all trails to remain open to foot traffic only, including snow shoes and cross country skis; however, no bicycles, horses, or ATVs would be allowed.

Within 5 years of CCP implementation:

- complete a Visitor Service's Plan for the Refuge incorporating strategies identified herein; establish thresholds of acceptable change to resources resulting from public use; develop monitoring strategies to measure change, measure achievement of objective, and to evaluate visitor experiences. Modify or restrict access, or adapt management strategies as warranted.
- develop interpretive signs for Halifax Island focusing on the rare plant community.
- install information kiosks outside of Refuge Headquarters and satellite offices
- hire one additional Outdoor Recreation Planner (GS-9) to plan, implement, monitor, and evaluate environmental interpretive programs, and other Refuge public use programs. This position will be used in other public use programs. Within one year of hire, develop a monitoring and evaluation protocol to insure Refuge interpretive program is meeting objectives to plan and implement programs.
- hire a summer intern to conduct interpretive programs for the mainland units; this position will also assist environmental education program. Seek housing for interns and volunteers.
- utilize Partners In Flight Plans for ideas to incorporate into interpretive programs related to migratory landbird conservation.
- enhance interpretation on Birch Point Trail on the Petit Manan Point Division, including interpretive overlook and interpretive panels at Carrying Place Cove; move the interpretive panels on the Hollingsworth Memorial Trail to a location less intrusive on the viewshed.

- construct low-impact interpretive trails and overlooks at the Gouldsboro Bay and Sawyers Marsh divisions, and at Corea Heath once acquired by the Service.
- develop a Refuge video, fact sheets, and brochures for use at on-refuge and off-refuge events.
- install Refuge interpretive panels at three coastal Maine roadside rest areas.
- in partnership with NAS and others, finalize concept and design for a Refuge coastal education center in the mid-coast area along Route 1 that will provide interactive exhibits and staff- and volunteer-led environmental education programs.
- hire two maintenance workers to help with public use facilities and other Refuge programs as needed.
- create an internship program in conjunction with Unity College or other institutions whereby students will work at the Coastal Education Center for a semester. Seek housing for interns and volunteers.

Objective 6.3 (Environmental Interpretation - Commercial Tours)

Within 3 years of CCP approval, 90% of the patrons who go on a commercial, Maine-based, seabird-tour boat excursion to a Refuge island will understand the value of Maine’s coastal islands for nesting seabirds and be able to identify the Refuge’s role in seabird conservation at the conclusion of their trip.

Background: Approximately 25,000 people annually take commercial seabird tour boat excursions from Bar Harbor, Maine past the Refuge’s Petit Manan Island. The Bar Harbor-based companies typically hire on-

board naturalists to provide information about the natural history of seabirds and associated management and restoration projects. Since the boats do not land, they provide a unique opportunity for many people to observe and photograph seabirds without disturbing them. Our staff provides updated information weekly about the Petit Manan Island seabird colony to the tour companies. In the spring and summer, staff periodically go on tours to monitor the accuracy of presentations.

In addition to Bar Harbor, two other smaller operators are based in Jonesport and Cutler and take approximately 2,000 patrons annually to Machias Seal Island. These boats land on the island and patrons are allowed to view nesting seabirds through blinds.



Visitors touring Machias Seal Island
USFWS photo

In the future, we would like to increase the visibility of the Service and promote our conservation efforts through more direct involvement in these commercial operations. Below we propose to place interpreters on each tour boat viewing Refuge resources.

Strategies:

Within 5 years of CCP implementation:

- complete a Visitor Service's Plan for the Refuge incorporating strategies identified herein; develop monitoring strategies to evaluate visitor experiences, and to measure achievement of objective. Adapt management strategies as warranted.
- annually meet with tour boat operators with destinations to Refuge islands to provide information on the Service, the Refuge and its management purposes. Continue to provide the operators with updates on nesting status throughout the season.
- place interpretive panels about the Refuge and seabird conservation in tour boat operator's offices or launch sites and on the tour boats.
- hire enough summer interns or volunteers to regularly work as interpreters on tour boats viewing Refuge resources; seek challenge grants as possible funding source. Also, seek housing for interns and volunteers.
- develop method of surveying tour boat patrons at the end of their tour to determine if our objective is met; look for partners to help with surveys.

Objective 6.4 (Hunting)

Provide an expanded, high quality hunting program in which 80% of Refuge visitors, both hunters and non-hunters, will report having had a positive experience on the Refuge during any hunting season.

Background: In May 2001, we issued a final Refuge Hunt Plan and environmental assessment after a 30 day public review and comment period. These documents resulted in approval to open up portions of the Refuge to hunting for the first time since in Service ownership. With our hunt program, we intend to: 1) maintain a diversity of habitats within the Refuge that are capable of supporting a diversity and abundance of wildlife species, and 2) provide wildlife-dependent recreational opportunities. We recognize hunting as a healthy, traditional, outdoor pastime that is deeply rooted in American heritage and, when managed appropriately, can instill a unique understanding and appreciation of wildlife, their behavior, and their habitat needs. It is also a priority public use on national wildlife refuges, where compatible, as stipulated in law.

The Refuge Hunt program was first implemented during the 2001-2002 State seasons. The Gouldsboro Bay and Sawyer's Marsh divisions are open

to migratory game bird and waterfowl and small and big game hunting. Bois Bubert Island is open to white-tailed deer hunting only. Twenty-two additional Refuge islands are open to migratory waterfowl hunting.

The Petit Manan Point Division was not opened to any hunting under this 2001 hunt plan, but this CCP allows for a new hunting opportunity. A deer hunt area will be opened above the entrance road in the Birch Point trail area to: 1) hunters with disabilities during the regular rifle season, and 2) hunters of all abilities during the regular muzzle-loader season. This change is in response to MDIFW's request for the additional hunting opportunity and Service direction to accommodate high priority recreational opportunities on NWRs where compatible.

According to the draft policy on hunting on national wildlife refuges, issued in the January 16, 2001 Federal Register, a quality hunting experience is one that: 1) maximizes safety for hunters and other visitors; 2) encourages the highest standards of ethical behavior in taking or attempting to take wildlife; 3) is available to a broad spectrum of the hunting public; 4) contributes positively to or has no adverse effect on population management of



White-tailed deer on Petit Manan Point Division
Photo by Craig Snapp

resident or migratory species; 5) reflects positively on the individual refuge, the System, and the Service; 6) provides hunters uncrowded conditions by minimizing conflicts and competition among hunters; 7) provides reasonable challenges and opportunities for taking targeted species under the described harvest objective established by the hunting program; 8) minimizes the reliance on motorized vehicles and technology designed to increase the advantage of the hunter over wildlife; 9) minimizes habitat impacts; 10) creates minimal conflict with other priority wildlife-dependent recreational uses or Refuge operations; and 11) incorporates a message of stewardship and conservation in hunting opportunities. These are all criteria we will use to evaluate our hunt program.

Strategies:

- continue policy that all trails open to hunting will remain open to foot traffic only; no bicycles, horses, or ATVs will be allowed.
- continue to allow dogs off leash only to facilitate the hunt effort and only under control of the hunter at all times. This would include flushing, pointing, and retrieving dogs.
- continue to annually conduct patrols of Refuge lands, both open and closed to hunting.
- continue to annually review the Refuge Hunt Plan and institute changes as appropriate.

Within 5 years of CCP implementation:

- complete a Visitor Service's Plan for the Refuge incorporating strategies identified herein; establish thresholds of acceptable change to resources resulting from hunt program; develop monitoring strategies to measure resource change, measure achievement of objective, and evaluate visitor experiences. Modify or restrict access, or adapt management strategies as warranted.
- annually hold at least one hunter orientation program on the Refuge or in local communities.
- within 1 year of CCP approval, open Petit Manan Point to the following deer hunting opportunity: a) hunters with disabilities during the regular rifle season, and 2) hunters of all abilities during the regular muzzle-loader season. Modify the existing hunt plan to incorporate this change.
- produce a Refuge hunting brochure, including Refuge regulations and maps.
- establish a monitoring protocol for evaluating the quality of experience for hunters and non-hunters during various hunting seasons.
- hire GS-7 and GS-9 law enforcement officers to help administer the program and conduct visitor outreach.

Objective 6.5 (Wildlife Observation and Photography on Mainland Divisions)

Within 5 years of CCP approval, create and enhance opportunities for high quality wildlife observation and photography on the Refuge mainland divisions, while insuring that 80% of adult visitors report they will return to the Refuge because it represents to them an ideal natural environment within which to observe and photograph wildlife (Maps 4-1 to 4-4).

Background: Wildlife observation and photography are two of six priority public uses designated by the Refuge System Improvement Act of 1997. The other four priority uses are hunting, fishing, and environmental education and interpretation. These six uses are to receive enhanced consideration in refuge planning and opportunities to engage in these activities should be provided to the extent compatible with Refuge goals and objectives.

We believe we can improve our existing programs and create new, high-quality opportunities for wildlife observation and photography on our mainland divisions. We currently maintain two foot trails: the Hollingsworth Memorial Trail (1.5 miles roundtrip) and the Birch Point Trail (4.0 miles roundtrip). Both trails are on the Petit Manan Point Division and are open year round. The John Hollingsworth Memorial Trail has parking for approximately eight cars; the Birch Point Trail has parking for approximately 10 cars. There are many times during summer when the parking lots are full. We are currently monitoring trail and road usage on Petit Manan Point using volunteers, interns, and counting machines. During 2001,

approximately 19,000 people visited the area. Our current program also allows commercial photographers access to Refuge lands, which are otherwise closed to public access, under individual special use permits. The only fully accessible facility on the Refuge is an informational kiosk on the main access road to Petit Manan Point.

Under this alternative we are proposing to develop a wildlife observation, photography, and interpretative trail on each of the mainland divisions.

Strategies:

- continue policy that all trails will remain open from sunrise to sunset, to foot traffic only, including snowshoeing and cross country skiing; no bicycles, horses, or ATVs will be allowed. The only vehicle access is on Petit Manan Road, Petit Manan Point Division.
- continue to allow commercial filming and photography on the Refuge only when there is a direct benefit to the Refuge and/or the Service. All allowed commercial filming and photography will operate under a special use permit once determined compatible by the Refuge Manager.

Within 5 years of CCP implementation:

- complete a Visitor Service's Plan for the Refuge incorporating strategies identified herein; establish thresholds of acceptable change to resources resulting from public use; develop monitoring strategies to measure change, measure achievement of objective, and evaluate visitor experiences. Modify or restrict access, or adapt management strategies as warranted.



A visitor on the Birch Point Trail, Petit Manan Point Division
USFWS photo

- Move the signs near Chair Pond on the Hollingsworth Memorial Trail to a location that is less imposing on the viewshed.
- construct a parking area and wildlife observation and photography trail on the Gouldsboro Bay Division.
- construct a parking area and accessible trail with overlook on the Sawyers Marsh Division.
- construct one barrier-free trail and observation platform at Corea Heath Division. Trail will occur on existing raised road foot print and be approximately 1,000 ft in length.
- hire GS-7 and GS-9 law enforcement officers to help administer the program and conduct visitor outreach (same positions as Objective 6.4).

Objective 6.6 (Public Access on Refuge Islands)

With primary consideration to wildlife protection and public safety, allow access to Refuge islands so visitors can observe and photograph these unique, natural landscapes. Within 3 years of CCP approval, at least 90% of island visitors contacted can explain, and fully support, the purpose of access restrictions, and further support island conservation by conducting themselves according to “Leave No Trace” principles.

Background: Our primary responsibility is to protect wildlife and promote wildlife conservation. To this end, some sensitive areas require us to restrict public access to minimize disturbance to wildlife, especially during the nesting season. The Refuge’s seabird nesting islands are closed to public use and access from April 1 to August 31 each year. The only exception to these dates is on islands where only gulls or eiders are nesting. The closure period on those islands is April 1 to July 31, which more closely conforms to State closure periods. On active bald eagle nesting islands, the closure period is February 15 to August 31 each year. Historic bald eagle nesting islands, which are not currently active, will have a closure period from February 15 to May 15 to encourage nesting. If no bald eagle activity is observed by May 15, the island will be opened to public use and access. If bald eagle activity is observed, the island will remain closed until August 31. As new islands are acquired by the Service, or new biological information is obtained on current Refuge islands, the closure periods will be modified to conform to the respective dates noted above.

Most of Halifax Island is closed to protect botanical resources. Seal Island is closed to all public use due to unexploded ordnance. Cross, Scotch, Bois Bubert, and the remainder of Halifax Island are open to public use year round. In addition, camping is allowed in designated areas on Bois Bubert and Halifax islands as part of the Maine Islands Trail Association (MITA) trail system. Unfortunately, we do not currently have a systematic and objective way to measure impacts to island resources. We would like to work with MITA and other partners to establish thresholds on what is acceptable change to resources and when should restrictions or mitigation measures be imposed to reverse unacceptable change before it's too late.

We utilize interns to help manage potential visitors trying to land on a seabird island during the nesting season. They alert visitors to the closure regulations and discourage them from disembarking.

Notwithstanding these restrictions, we encourage visitors to engage in compatible, priority public uses on Refuge islands to gain an appreciation of their beauty and significance to migratory birds. Although rugged in appearance, Maine’s offshore islands are delicate ecosystems. “Leave No Trace” is a nationally recognized curriculum of outdoor ethics that promotes mindful use of recreational lands. We will encourage visitors to use Leave No Trace principles by promoting them during visitor encounters and through Refuge literature and outreach information.

Strategies:

- continue to annually evaluate island access restrictions, and considering new information, modify as necessary to protect sensitive areas or species of management concern.
- continue to work with MITA, under a special use permit, to manage the camping on two islands; no expansion of camping opportunities would occur.

Within 5 years of CCP implementation:

- insure interpretive and regulatory signs are posted on all Refuge islands with restrictions.



Freshwater pond on Bois Bubert Island
USFWS photo

- develop Refuge criteria or guidance on appropriate protective measures required for visitation to the Refuge's nesting islands within 2 years of CCP approval, in conjunction with the Visitor Services plan. Also, evaluate whether opportunities exist for education programs on a limited number of nesting islands during the nesting season.
- meet with MITA two to three times per year to discuss the Island Stewardship Program on Refuge islands open to day use.
- train all Refuge staff members in "Leave No Trace" principles.
- hire GS-7 and GS-9 law enforcement officers to help administer the program and conduct visitor outreach (same positions as Objective 6.4).
- work with MITA, ME Bureau of Parks and Lands, and other partners to design and implement a monitoring protocol to establish thresholds of acceptable change on both day use and camping islands to prevent unacceptable, irretrievable damage from occurring to resources. Such things as vegetation and soil erosion both inside and outside of designated camping sites would be monitored on a regular basis. Also develop protocol to measure "Leave No Trace" compliance.
- establish an Island Stewardship Program on at least five Refuge islands to help monitor public use and associated effects on wildlife and habitats. Existing informal stewardship programs with local land trusts for Little Thrumcap, Outer White, and Roberts Islands should be formalized.
- develop a Refuge brochure about colonial nesting seabirds and the importance of the use of "Leave No Trace" principles when visiting the islands.
- as new islands are acquired by the Refuge (see Goal 7, Objective 7.1), priority compatible uses would generally be allowed consistent with seasonal restrictions during the nesting season, unless there are overriding resource concerns. Existing compatibility determinations will be amended accordingly.

Goal 7: Protect the Integrity of Coastal Maine Wildlife and Habitats through an Active Land Acquisition and Protection Program, and through Special Land Designations

Objective 7.1 (Service Island Acquisition)

To insure the permanent protection of important Maine coastal island habitats, during the 15-year life of this CCP, the Service will pursue acquisition, from willing sellers, of an additional 87 nationally significant coastal nesting islands, which currently lack permanent protection (see Land Protection Plan, Appendix A).

Background: We describe in Appendix A, how we have worked with the Service's GOMP, MDIFW, MCHT, and our other land conservation partners to develop a "nationally significant coastal nesting islands" list for coastal Maine. Three hundred and seventy-seven (377) islands are currently on the list; 226 of these are already protected long-term (GOMP, December 10, 2001). The remaining 151 islands are still in need of permanent protection. The ultimate goal among all partners is to achieve permanent protection for these 151 islands, and to manage them as needed to insure the long-term nesting success of species of management concern.

The Service can contribute to this goal best through acquisition, especially for those islands that need active management for Federal trust species. We have determined that, based on our rate of acquiring Maine coastal islands since 1993, 87 islands is a reasonable and practical 15-year objective for the Service. Eighty-seven is based on assuming an average acquisition rate of approximately six islands/year for the 15-year planning period. This seemed reasonable to us based on the fact the Service has acquired up to 12 islands/year (1995), and has twice acquired more than 6 islands/year. As such, 6 islands represents the mid-point in the range of the historic acquisition rate; from a maximum of 12 to a minimum of 0 in any given year. The Service would consider fee simple acquisition, purchase of conservation easements, acceptance of land donations, land transfers or exchanges, as methods of acquisition from willing sellers.

Since no single partner, including the Service, has the resources to achieve the 151 island protection goal single-handedly, this goal necessitates a strong land protection partnership. As an individual island becomes available for sale from a willing seller, the Service and its coalition of island protection partners determines which partner, through ownership, could best serve the long-term protection of the respective island. The island's specific resources of significance (e.g. seabirds, bald eagles, wading birds, or the endangered roseate tern), the level of management or restoration required, its proximity to other partner-owned islands, current owner preferences, timing, and availability of financial and administrative resources are all considered when determining the recommendation for ownership.

In developing this alternative, we have identified which 87 unprotected nationally significant coastal nesting islands we believe, given current resource information and consideration of the factors above, should be in Service ownership. It is important to recognize that there may be a need to reconsider individual islands as new information becomes available. In the

future, any island being considered for Service acquisition that is not on the Appendix A list may require additional NEPA compliance documentation.

While our principal mission in acquiring these islands is the protection of Federal trust wildlife resources, there are other important resources on the islands identified, such as cultural and historic resources. It is not the Service’s intent to acquire historic structures, such as lighthouses, which may occur on these islands unless it is essential to secure the protection and management of wildlife resources. If possible, the preference is to seek partners willing to undertake responsibility for the management and protection of these resources.

Table 4-1 summarizes our land acquisition plan.

Table 4.1 Land acquisition summary

Lands approved for acquisition prior to the 2005 LPP for Petit Manan Refuge*	
Mainland	120 acres
Islands (or parts of) 14 islands**	347 acres
Corea Heath	400 acres
Lands approved for acquisition in the 2005 LPP for Petit Manan Refuge	
Mainland	153 acres
Islands (or parts of) 87 islands	2,306 acres
Total Acres to be acquired:	3,326 acres

*Acquisition has been on-going during development of the CCP. Contact Refuge Headquarters for the latest information.

**Six of the islands are already part-owned by the Service; or in the process of Service acquisition.

Strategies:

- continue to acquire private lands on islands from willing sellers within currently approved acquisition boundary; 25 tracts on 14 islands (347.5 acres). All lands acquired would become part of Petit Manan Refuge.
- continue to participate in annual coordination with the Gulf of Maine island protection partners including: GOMP, MDIFW, TNC, MCHT, local land trusts, and private landowners.
- continue to work annually with GOMP to insure nationally significant island list is updated.
- once approved, begin to implement the Land Protection Plan (LPP) for the Refuge (Appendix A), authorizing acquisition of 87 islands (approximately 2,306.4 acres) from willing sellers.

Objective 7.2 (Cooperative Protection and Management of Islands)

Support the efforts of our land conservation partners in protecting and managing the other 64 nationally significant coastal nesting islands, as well

as all other islands supporting Federal trust species not permanently protected, and not proposed for Service acquisition in the Land Protection Plan.

Background: As noted above under the Background for Objective 7.1, all 151 islands are nationally significant and the goal is to seek permanent protection for each one. Protection of nationally significant Maine coastal islands has always been a partnership effort, and would continue to be so. We would continue to play a role in identifying the most important islands for Federal trust resources. Under this alternative, the Service would not be acquiring all the islands considered nationally significant. It would be our hope that our partners would take the lead in acquiring whatever rights are needed to permanently protect the 64 islands and all other islands important to Federal trust species. However, within the limits of our funding and staffing, we would also be willing to share in management of these islands. Cooperative management agreements with conservation landowners are one tool to achieve resource objectives on many islands where the owner “can’t do it all.” An agreement may involve the Service helping to manage public use, or providing signage, conducting banding for long term monitoring, or doing periodic habitat manipulations. Each agreement would need to be specific to the island.

Strategies:

- continue to participate in annual coordination with the Gulf of Maine island protection partners including: Service’s GOMP, MDIFW, TNC, MCHT, local land trusts, and private landowners.
- continue to work with Service’s GOMP to insure the nationally significant island list is updated.
- on a case-by-case basis, continue to consider cooperative management agreements with other ownerships where protection of Federal trust resources is a priority.

Objective 7.3 (Service Mainland Acquisition and Protection)

Within the established Maine Wetlands Protection Coalition Team framework, each year continue to identify and pursue long-term protection of Maine coastal properties important for Federal trust resources conservation.

Background: The Refuge has for many years worked in cooperation with conservation partners on mainland acquisition and protection of important habitats in coastal Maine. Partners such as MDIFW, Maine Coast Heritage Trust, and the Service’s Gulf of Maine Program meet periodically to discuss opportunities to protect important wildlife habitats on the mainland. Included in this partnership is the Maine Wetlands Protection Coalition Team effort, which was convened to implement the North American Waterfowl Management Plan. With MDIFW as the lead agency, this interagency team is developing regional protection plans which will identify and prioritize biologically significant wetlands within each region in need of long-

term protection. The team is currently evaluating the mainland coast nearest the Refuge's mainland divisions. Once a regional plan is developed, we will work with the team to determine which properties contain Federal trust resources and are best served under Service ownership.

Over the years, many landowners have expressed interest in selling their land to the Service. In fact, over the last 25 years, landowners have willingly sold several thousand acres, resulting in our three mainland divisions in the Towns of Milbridge, Steuben, and Gouldsboro. A fourth division, Corea Heath, comprised of 400 acres in the Town of Gouldsboro is in the process of being transferred to the Service from the Department of the Navy (U.S. Navy). Since 2000, we have been working with the U.S. Navy, the Town of Gouldsboro, and Congressional staffers to protect this undeveloped area of heathland, an ecologically significant bog community. An additional 57-acre developed area would be transferred to a state or municipal entity.

This alternative would include Service acquisition of 119.6 acres of private inholdings in 3 tracts already approved for acquisition, and an expansion of 153.3 mainland acres. The expansion acres include a 3.3 private tract in our Gouldsboro Bay Division and a 150 acre area known as "Sprague Neck" in the Town of Cutler on Machias Bay. Sprague Neck is a priority protection area under the Atlantic Coast Joint Venture Plan and has been identified by MDIFW and our GOMP as a significant habitat for migrating shorebirds. Sprague Neck is currently U.S. Navy property, and we would pursue acquisition via a no-cost transfer.

Strategies:

- continue to acquire 120 acres of private lands within the currently approved Refuge boundary on the mainland divisions; two tracts on Petit Manan Pt and one on Sawyers Marsh. All lands acquired would become part of Petit Manan Refuge.
- once approved, begin to implement the LPP for Petit Manan Refuge (Appendix A), authorizing an expansion of 153.3 acres of significant Federal trust resources habitat, when willing sellers become available.
- beginning in 2005, Refuge staff will participate on the interagency Maine Wetlands Protection Coalition Team. We expect this team may develop a plan within 3 years of CCP approval. Pursue contacts with landowners to establish willingness to sell. These lands are not covered by the LPP and approval would require additional environmental analysis and compliance documentation.
- Until the Wetlands Protection Coalition Team plan is completed, and/or considering significant habitats other than wetlands, continue to cooperate with the Service's GOMP, MDIFW, TNC, MCHT, local land trusts, and private landowners to seek a means of protection when parcels become available. Consider acquisition of these properties on a

case-by-case basis if the partnership determines that protection is best served by Service ownership. These lands are not covered by the LPP and approval would require additional environmental analysis and compliance documentation. Pursue Service fee acquisition or conservation easements of these lands as warranted by approvals.

Objective 7.4 (Local Support for Service Land Acquisition)

To develop local support for continued Refuge expansion, within 5 years of CCP approval, contact each affected town's elected officials to share information on the benefits of refuge lands to their community.

Background: Our desire is to be considered a welcomed and appreciated asset to the local communities within which refuge lands occur. We recognize that some residents and elected officials are concerned with the impact refuge lands has on the local tax base since the Service does not pay property taxes. On the other hand, since 1935, the Service has made annual refuge revenue sharing payments to affected towns based on an annual allocation formula determined by Congress. This amount can sometimes equal or exceed the amount of tax revenue that would have been collected if in private ownership.

We believe most residents view the presence of refuge lands in their community as positive. By maintaining natural landscapes, we are affording opportunities for residents to enjoy nature and observe wildlife. We also promote this enjoyment through outreach, environmental education and interpretive programs. Local communities can also benefit when a refuge draws visitors who spend money at local businesses. We would like to promote these benefits to enhance our support by local residents.

Strategies:

Within 5 years of CCP implementation:

- each year, with distribution of refuge revenue sharing payments, staff will make personal contacts with respective local elected town officials to discuss benefits of refuge lands and land acquisition opportunities.
- each year, contact community officials in towns where Service land acquisition is approved to provide information on the Refuge System, and the values of refuge lands in their community.
- each year, make periodic contacts with local community leaders, such as chambers of commerce, bed and breakfast associations, the Down East Corridor Association, service clubs and organizations to promote the benefits of refuge lands and our land acquisition program.
- each year, meet with the Star Island Corporation to update them on Refuge programs and management projects on Smuttynose Island.
- each year, meet with members of the Damariscotta River Association and Boothbay Region Land Trust to update them on Refuge programs in the mid-coast area.

Objective 7.5 (Wilderness Designation)

Recommend wilderness designation for 13 Refuge islands in 8 Wilderness Study Areas and manage these islands to retain their wilderness character and values consistent with refuge establishment purposes and the Refuge System mission.

Background: The Service's Refuge System Planning Policy requires that a wilderness review be conducted concurrent with the CCP process. During 2001, we initiated a wilderness review of existing Refuge lands. The review process consists of three phases: inventory, study, and recommendation. Our wilderness review process and maps of the Wilderness Study Areas (WSAs) are presented in detail in Appendix D.

To summarize, the inventory phase took a broad look at existing Refuge lands to identify lands and waters that meet the minimum criteria for wilderness, as defined in section 2(c) of the Wilderness Act (16 U.S.C. 1131-1136). The criteria used are size, naturalness, opportunities for solitude or primitive recreation, and supplemental values. Areas that meet these criteria are defined as WSAs. We determined 13 islands met the minimum criteria. We combined these 13 islands into 8 WSAs. The boundaries around these WSAs are defined by the high water mark, and exclude private inholdings and rights-of-way on Cross and Bois Bubert islands, and the common boat landing and Lily Pond on Bois Bubert Island (Appendix D).

In the study phase, we evaluated whether we could manage these 8 WSAs, individually and collectively, over the long-term to maintain the quality of their wilderness values and character without compromising our ability to meet refuge purposes and the Refuge System mission. We specifically evaluated the impacts wilderness designation would have on our current or planned refuge management activities and refuge uses, including allowed public use and access. No impacts were identified. We also considered the potential impacts to the wilderness resources from off-site activities such as tour boat operations, commercial and recreational fishing, aquaculture facilities, and intertidal harvesting activities, and do not believe the current levels of activity and facility developments diminish wilderness character in the 8 WSAs. We also do not anticipate that wilderness designation would cause any restrictions on current levels of these uses.

In this CCP, we are recommending all 8 WSAs for designation as wilderness. As part of this recommendation, if the exclusions noted above are acquired by the Service, we propose to incorporate them into the respective WSA or designated wilderness, through administrative action.

This wilderness recommendation is a preliminary administrative determination that will receive further review and possible modification by the Director. If approved, we will forward the final recommendations from the Director, through the Secretary of Interior and the President, to Congress in a wilderness study report. Congress has reserved the authority to make the final decisions on wilderness designation.

Insofar as it does not impact our ability to meet refuge purposes, and the Refuge System mission as outlined in the 1997 Refuge Improvement Act, we will manage the WSAs in accordance with management direction in this final CCP and maintain the islands' wilderness character, natural values, and outstanding opportunities for solitude and primitive recreation. This direction would remain in place until Congress makes a final determination on their addition into the National Wilderness Preservation System (NWPS), or unless we obtain information that warrants a modification to the recommendation. If a modification is necessary, we would amend this CCP to change or remove the wilderness recommendation.

Strategies:

Within 5 years of CCP implementation:

- evaluate all planned and future proposed Service activities, projects, or new uses in the WSAs for their potential to directly, indirectly, or cumulatively impact the wilderness values and character. We will conduct a "minimum requirement analysis" (MRA) for each activity to assess potential impacts and identify mitigating measures to protect wilderness character.
- allow, in general, activities that involve temporary uses that create no new surface disturbance and do not involve placement of permanent structures.
- once formal designation occurs, within two years, develop a wilderness stewardship plan (WSP) as a step-down plan. The WSP will identify goals, objectives, and stewardship strategies for wilderness areas based on refuge purposes, the Refuge System mission, and wilderness stewardship principles.
- evaluate all future Refuge acquisitions for their wilderness potential concurrent with the next required revision of the CCP.

Objective 7.6 (Special Designation for Corea Heath Division)

Within 5 years of CCP approval, evaluate the Corea Heath Division for its potential as a Research Natural Area or other special area designation.

Background: Numerous studies have identified Corea Heath as an exemplary coastal plateau bog ecosystem (e.g. Worley, 1980; Glanz and Connery, 1998). It is best described as a clearly raised, essentially treeless, coastal peatland with some rare and unique coastal vegetation. This peatland is designated as a Maine Critical Area because it is one of the largest and most southerly coastal raised peatlands in North America, and because its unique concentric arc pattern of vegetation is rare in the coastal region (Worley 1980). It was formerly a U.S. Navy electronics facility and public use was not allowed. The limited construction that occurred, and the restricted access, has resulted in very little disturbance to the peatland. Since drainage patterns appear unaltered, and since the peat deposit seems intact, the site offers a significant opportunity to study this unique ecosystem.

Strategies:

Within 5 years of CCP implementation:

- review special designations within Service’s authority to determine if the Corea Heath Division qualifies; pursue designation according to Service policy as warranted.

Objective 7.7 (Archaeological Resources)

Preserve archaeological resources on the Refuge from destruction by coastal erosion or artifact looting.

Background: Service actions likely to affect archaeological and historic sites are routinely reviewed and assessed under the provisions of Sec. 106 of the National Historic Preservation Act. To date, projects requiring such review on the Refuge have been confined to architectural rehabilitation of lighthouse structures, so Refuge lands have never had a systematic archaeological survey.

Based on archaeological studies of similar environments in Maine (Kellogg, 1982; Yesner 1980), it is likely that many unrecorded coastal archaeological sites exist on the current Refuge and on islands proposed for acquisition. It is also very likely that all these sites are undergoing some erosion. All recorded prehistoric archaeological sites on the Refuge have been severely damaged by erosion, and some have probably vanished into the sea since they were reported. Archaeologists in the State Historic Preservation Office, universities, museums, and consulting firms working in Maine all agree that erosion is the greatest single threat to coastal archaeological sites in the state. If a concerted campaign is not undertaken soon to locate, monitor, and assess such sites for listing in the National Register of Historic Places, and preserve or conduct archaeological excavation of them, a major piece of the region’s prehistory and early history will be lost forever.

Current looting of artifacts from eroding sites on the Refuge is not documented, but it is noteworthy that most of the prehistoric sites and one of the historic sites were reported by local residents who collected material from them prior to Federal ownership. Most of these sites contain clam shell, which makes them highly visible to anyone walking the shore or skirting it in a small boat.

No staff has taken the Federal Law Enforcement Training Center’s Archaeological Resources Protection Act (ARPA) course. This severely hinders our ability to investigate looting violations. Even more notably, the absence of any visible day-to-day law enforcement presence on the islands makes enforcement virtually impossible unless it can be accomplished through public education and monitoring partnerships with agencies and communities that have an interest in Refuge lands and resources.

Strategies:

- continue to consult with the Maine Historic Preservation Commission regarding Refuge undertakings that have potential to affect

archaeological resources, performing archaeological studies of project areas as needed.

Within 5 years of CCP implementation:

- ensure that an ARPA message is incorporated into Refuge brochures, including those produced by Refuge partners, following Leave No Trace themes.
- perform surface surveys of selected Refuge island shorelines to locate archaeological resources at risk from coastal erosion or artifact looting. The late Dr. Douglas C. Kellogg developed a model for both the location of such coastal sites and an assessment of erosion impacts upon them (Kellogg, 1982). A testing of his model may be a good starting point to focus this effort. Develop site management and protection plans as warranted.
- ensure that at least one staff person receives ARPA training.
- hire GS-7 and GS-9 law enforcement officers to help administer the program and conduct visitor outreach (same positions as Objective 6.4).
- produce a Cultural Resources Management Plan. This plan will include a prioritized program to perform additional surveys as properties are acquired, and a systematic program to monitor erosion and looting of known sites, as well as a management program for historic structures on the Refuge. The plan will also identify areas with a high probability of containing archaeological sites. Consult with the Maine Historic Preservation Office and Tribal Historic Preservation Office in developing this plan.

Objective 7.8 (Historic Resources)

Within 2 years of CCP approval, establish an annual program of historic lighthouse maintenance on the Refuge to meet the Department of the Interior's historic preservation standards.

Background: The National Historic Preservation Act considers deterioration of historic structures as an adverse effect upon them. Historic structures, currently limited to four lighthouse stations (Petit Manan Island, Libby Island, Matinicus Rock, and Egg Rock), were all in various states of repair when acquired by the Service. Most of these structures have received repairs since acquisition, but all require further repairs to place them in stable condition. Establishment of a regular program of cyclical maintenance, involving items such as painting and roofing repairs, will also be essential to protect these structures from further deterioration. These structures are perceived by the general public, preservation advocates, and historians as among the most significant in Maine, and their preservation is a trust responsibility for the Service.

Strategies:

- continue to consult closely with the Maine Historic Preservation Commission regarding repairs and annual and cyclical maintenance to the four National Register listed light stations on the refuge.



Historic photo of Petit Manan Island Lighthouse
Photo from The National Archives

Within 5 years of CCP implementation:

- develop a formal agreement with U.S. Coast Guard (USCG) to coordinate USCG maintenance activities on lighthouse islands and to insure there will be minimal disturbance to nesting seabirds; address timing of routine maintenance activities, develop protocols for USCG access to lighthouse islands for emergency activities; establish what logistical support can be provided to USCG.
- establish formal relationship with Friends of Nash Island Light and Friends of Franklin Island Light; utilize MOUs, Challenge Grants, and cooperative agreements as needed to support work.
- complete an inventory of maintenance needs necessary to bring each lighthouse to national and State preservation standards; incorporate needs into MMS system. Seek alternative funding sources and pursue partnerships to accomplish priority work.
- establish “Friends of Lighthouse” groups on Libby and Two Bush Islands, Egg Rock, and Matinicus Rock. Friends groups will work toward developing political and public support for maintenance of these historical structures

and developing interpretation and educational programs related to the history of lighthouses on the Maine coast.

- establish a relationship with national lighthouse preservation organizations; seek mutually beneficial partnerships.

Goal 8: Communicate and Collaborate with Local Communities, Federal, State, Local, and Tribal Representatives, and Other Organizations throughout Coastal Maine to Further the Mission of the National Wildlife Refuge System

Objective 8.1 (Research Partnerships)

Expand existing research partnerships to further our knowledge and understanding of Maine coastal ecosystems and the Federal trust resources which depend on them.

Background: Fortunately for us, the Refuge is sought after as a place to conduct research on undeveloped coastal environments. We have obtained a tremendous amount of information through research partnerships. This has particularly benefited us as we have not had the staff or funding to accomplish this work on our own. Some of the current research partnerships include: an Arctic tern and Atlantic puffin metapopulation study with the University of New Brunswick, Canada, a common eider survival and recruitment study with MDIFW and U.S. Geological Survey (USGS), and a purple sandpiper study with MDIFW and Acadia National Park. We would continue these research partnerships and encourage new ones to

enhance our ability to achieve our goals and objectives. We have identified several potential research projects under our biological objectives that we hope to pursue in the near future.

Strategies:

- continue partnership with Humboldt Research Station under a special use permit to provide outdoor laboratory opportunities on Refuge lands; seek an expansion of their activities to include inventory and monitoring of resources.
- continue research partnerships with MDIFW and other State agencies, USGS, NPS, NAS, and universities, and initiate new ones, that are directly beneficial to the Service on a local, regional, or national level.

Within 5 years of CCP implementation:

- insure all entities currently operating on Refuge lands are under a cooperative agreement, memorandums of understanding, and/or special use permits. All agreements should include a provision to annually share data and reports.
- in cooperation with partners, identify the highest priority research needs for the Refuge which will further the conservation and management of Federal trust resources. Refer to all proposed research projects identified under the biological objectives in this CCP.
- with priority research needs identified, cooperate with research facilities, educational institutions, and other agencies to establish research goals and methodology.
- Refuge staff will engage in developing research study designs, conducting field work, and writing publications to raise the visibility of the Refuge System within the research community and to elevate our contribution to science-based management. Staff will co-author papers on a regular basis.
- annually investigate alternative sources of funding to support research activities on Refuge lands.
- annually investigate and secure housing for researchers, interns, and biological technicians.

Objective 8.2 (Law Enforcement Partnerships)

Initiate partnership with other Federal, State, and local enforcement agencies and Tribal Nations to further the conservation and protection of Federal trust resources.

Background: Law enforcement staff plays an important role on the Refuge. Officers not only enforce regulations, but just as importantly, they conduct outreach and serve to raise the visibility of the Service in local communities while out on patrol.

It will be even more important in the future, should we implement this alternative with new programs and new regulations, that we have the capability to alert people to these changes and can enforce them, as necessary. We believe that a law enforcement partnership could substantially increase our ability to effectively manage and conserve Refuge resources.

Strategies:

Within 5 years of CCP implementation:

- hire GS-7 and GS-9 law enforcement officers to facilitate partnership and conduct visitor outreach (same positions as Objective 6.4).
- establish annual meeting with the local MDIFW game warden prior to and during hunting season to identify and monitor concerns.
- develop MOUs with Federal (e.g. Coast Guard), State and local law enforcement agencies, including Maine DMR and MDIFW game wardens, to establish agreements for back-up assistance, Refuge patrol, and the sharing of radio frequencies.

Objective 8.3 (Community Outreach)

Within 7 years of CCP approval, through increased community outreach, 65% of adults contacted who reside within 10 miles of refuge lands, will know the Refuge exists, that it is part of a national system of refuges, and can identify its management priorities for migratory bird conservation and seabirds.

Background: This objective strives to develop an effective outreach program targeted at Maine coastal communities whose residents may not be aware that a national wildlife refuge is nearby. It is particularly important that local residents understand, appreciate, and support the Refuge System mission and this Refuge's unique contribution to that mission. In addition, our volunteer program could grow and our Friends of Maine Seabird Islands groups could see enhanced membership and support. The proposed Refuge Headquarters and Coastal Education Center will serve as an important resource for Mid-coast residents, providing meeting and exhibit space for local conservation organizations, as well as educational and recreational opportunities.

Our current outreach program includes regular submissions of news releases and a biweekly column relating Refuge news and issues to local newspapers. We also provide at least four presentations annually to local civic organizations and staff a Refuge booth at approximately four fairs, sporting shows, or other community events.

Over the past few years as the Refuge has grown, and we have conducted more extensive outreach, we have noticed some confusion over the Refuge's name as "Petit Manan NWR Complex." This name made no sense to individuals who did not have an historical context. As such, under this alternative, we are recommending the name of the refuge complex be changed to "Maine Coastal Islands National Wildlife Refuge" to better reflect the Refuge's mission and its geographic context.

Strategies:

Within 5 years of CCP implementation:

- annually coordinate with Moosehorn and Rachel Carson refuges on outreach and education.

- regularly participate in Chamber of Commerce and other community events in Maine coastal towns where effective outreach of Refuge programs can occur.
- develop survey protocol to measure success with meeting objective.
- develop a Refuge video for use at on-refuge and off-refuge events.
- purchase a new phone system for the Refuge Headquarters that will provide current Refuge regulations, island openings/ closings, and upcoming events for Refuge offices.
- expand the existing Friends of Maine Seabird Islands Group based in Rockport to include a second chapter in downeast Maine. This will enhance the Refuge staff's capability of meeting Goals 1 through 7 above. Develop recruitment strategies with Regional Friends Coordinator; consider workshops and attracting people through the media.
- publish a quarterly newsletter; utilize volunteers, interns, and Friends Group for publication.
- hire a Volunteer Coordinator (GS-7) to plan and implement volunteer programs.
- complete development of a guide for island owners interested in island stewardship practices
- initiate administrative actions to change the name of the refuge complex to "Maine Coastal Islands National Wildlife Refuge"

Objective 8.4 (Elected Officials Outreach)

Within 5 years of CCP approval, 75% of all Federal, State, and local elected officials representing the surrounding Refuge communities will have visited the Refuge, and will understand its significance to migratory birds and other native wildlife.

Background: Gaining Congressional, State, and local elected officials support for Refuge programs is essential to meeting our goals. This can only happen when these elected officials understand and appreciate the nationally significant contribution of the Refuge and its programs to the permanent protection of Federal trust resources. We need to impress upon them the importance of refuge lands to current and future generations of Americans.

We are proud of our relationship with the Maine Congressional delegation, and have benefited by their involvement in recent years. Our relationships are not as strong with State and local elected leaders, and we hope to improve upon this situation with actions identified below.

Strategies:

Within 5 years of CCP implementation:

- continue annual Capitol Hill visits begun in 2001 and brief Congresspersons and staff on Refuge programs and projects.
- insure public offices receive all notices of Refuge events.

- host an annual field visit for elected officials and local community leaders to familiarize them with Refuge management priorities and issues.

Objective 8.5 (Adjacent Landowners Outreach)

Within 5 years of CCP approval, 80% of adjacent landowners will have been personally contacted by Refuge staff at least once in an effort to improve local community relationships and secure local support for Refuge management activities.

Background: As a public land management agency, it is very important to us that we are viewed as responsible and conscientious neighbors. Keeping in touch with adjacent landowners makes good business sense as it would serve to strengthen support for the Service and Refuge activities in the local communities. We have not had formal meetings with adjacent landowners or landowner associations to date. We periodically meet with landowners adjacent to our mainland divisions while in the field, but it has been infrequent and has been more on an opportunistic basis rather than planned. Our ability to meet with island landowners is more difficult. In recent years, we have deferred to local land trusts to contact and inform island owners of some of our activities. Under this alternative, we would like to conduct more direct outreach to adjacent landowners to improve our relationships.

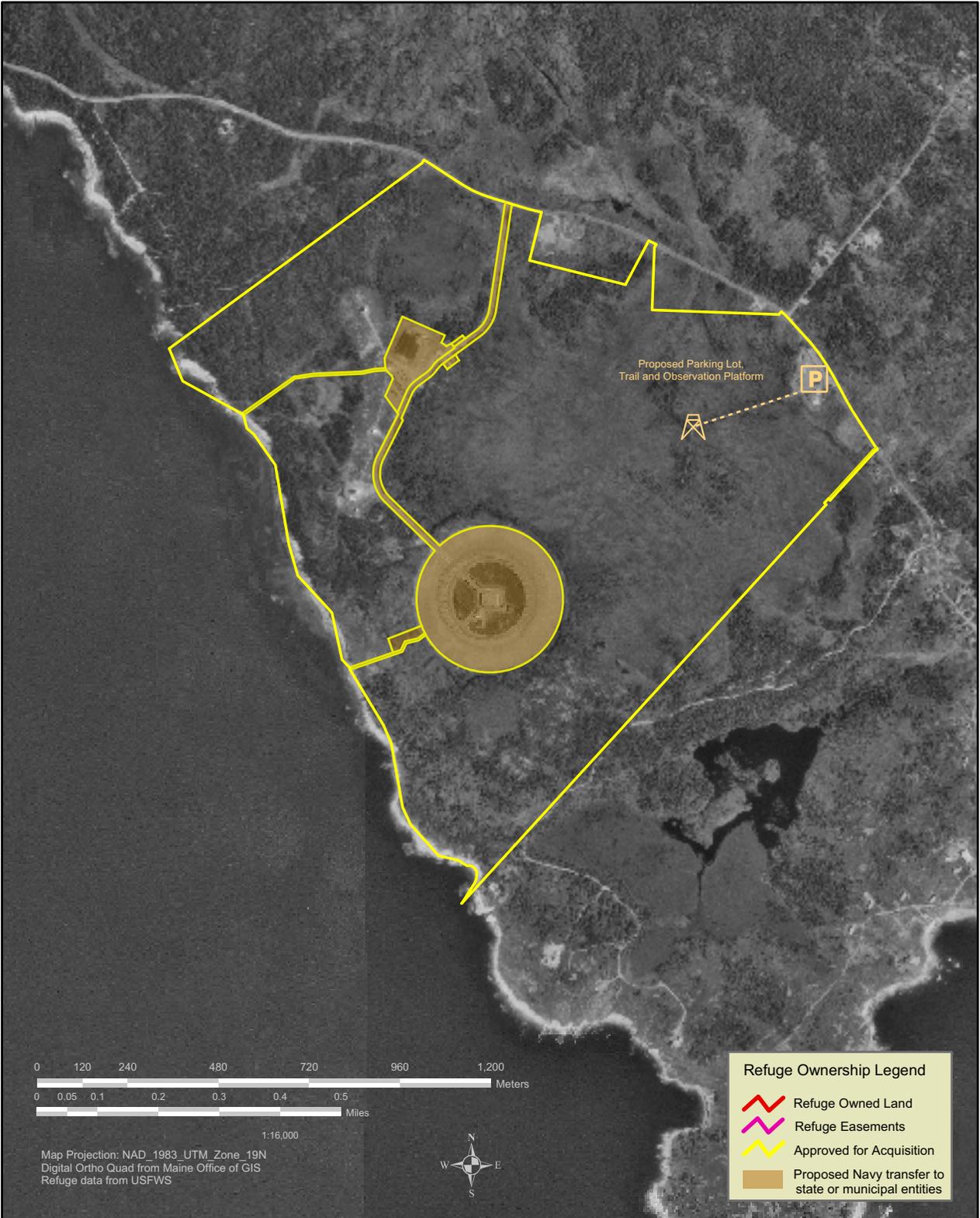
Strategies:

Within 5 years of CCP implementation:

- compile an adjacent landowner mailing list; insure adjacent landowners receive notices of Refuge events and receive Refuge newsletters. Offer to meet with any landowner with an interest in learning more about Refuge activities.
- meet annually with Section 1 landowners on Petit Manan Point.
- meet with adjacent landowners to the Sawyers Marsh and Gouldboro Bay divisions.
- meet with the following land trusts: Damariscotta River Association, Boothbay Region Land Trust, Vinalhaven Land Trust, and Harpswell Region Land Trust.
- meet with Star Island Corporation to discuss management on Smuttynose Island.
- meet with landowners on Bois Bubert and Metinic islands.
- identify where homeowners organizations exist adjacent to Refuge lands, establish a contact, and attend meetings where Refuge outreach is appropriate.
- personally contact owners of islands proposed for Service acquisition; offer to meet with anyone interested in learning more about Service programs and policies.

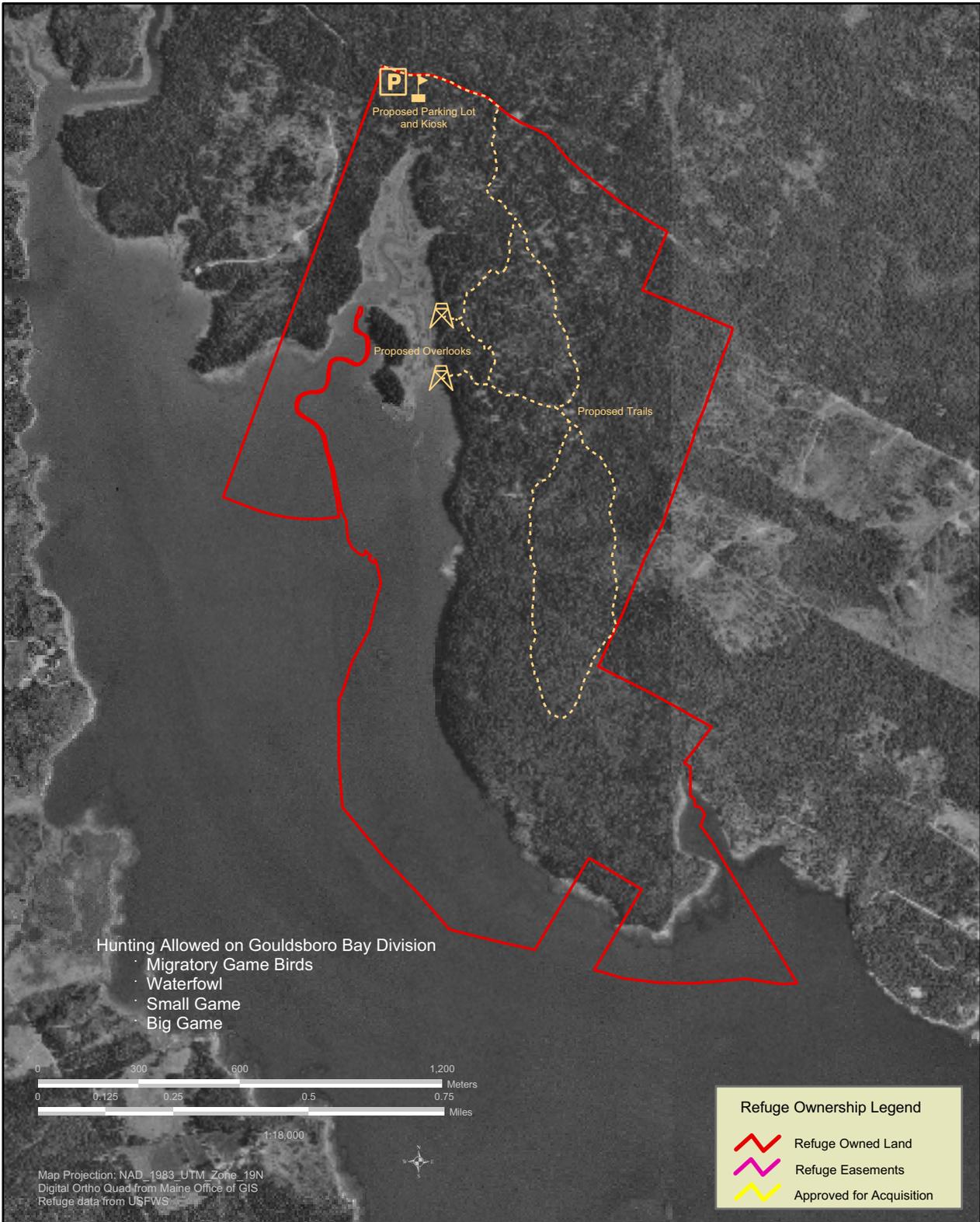


**MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT
Corea Heath Division Public Use**



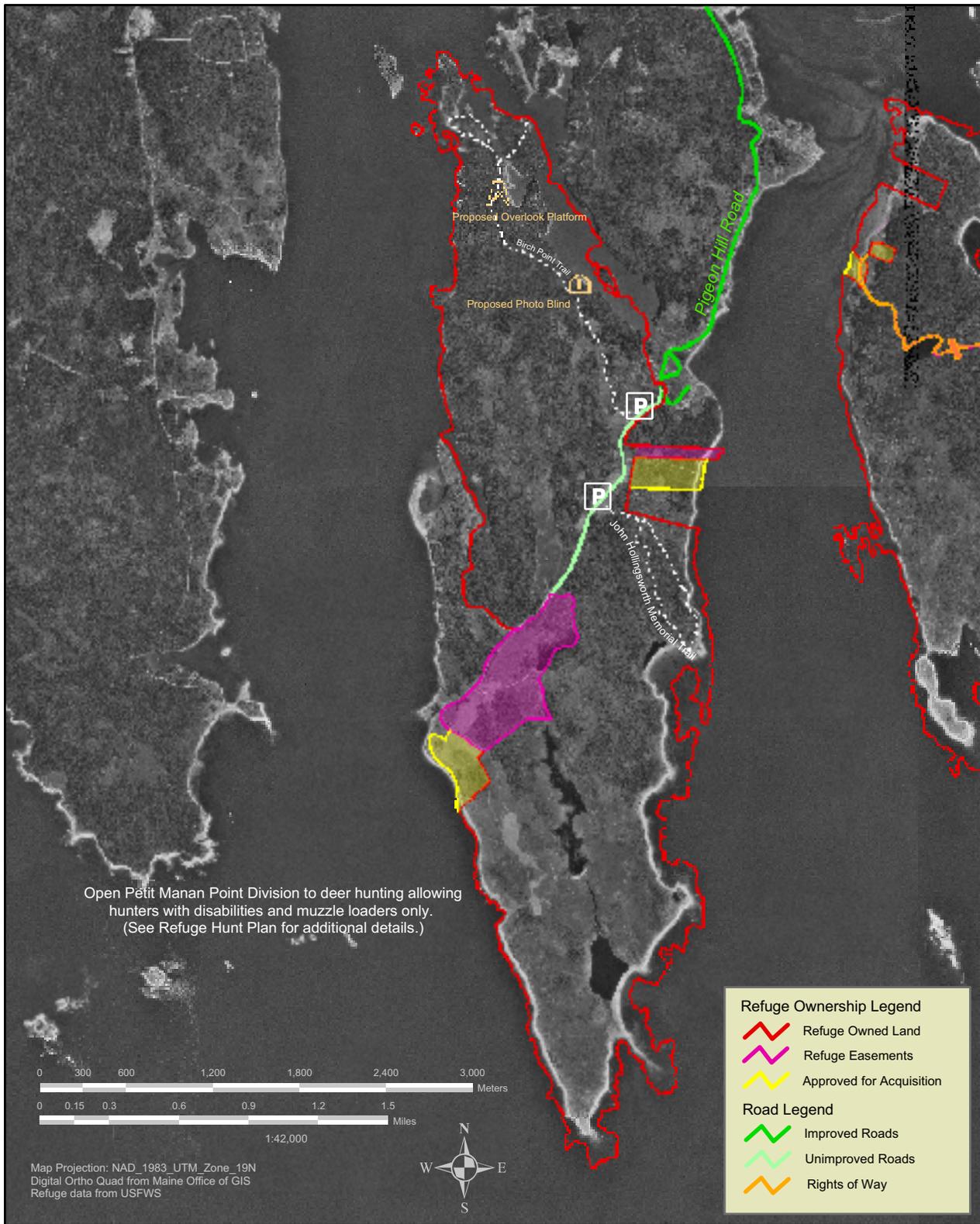


MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT
Gouldsboro Bay Division Public Use





**MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
 COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT
 Petit Manan Point Division Public Use**





MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT
Sawyers Marsh Division Public Use



Chapter 5



Public meeting
USFWS photo

Plan Amendment and Revision

- Refuge Staffing
- Refuge Funding Needs
- Existing Refuge Operational Plans (“Step-down” plans)
- Compatibility Determinations
- Monitoring and Evaluation
- Additional NEPA Analysis
- Adaptive Management
- Plan Amendment and Revision

Refuge Staffing

Four of our permanent staff are currently stationed at the Refuge Headquarters in Milbridge, Maine; two other permanent staff are stationed at our Rockport, Maine office. In Figure 5-1, we identify currently filled positions, overall supervisory structure, and the essential positions needed to fully implement the CCP. The new positions identified will increase biological expertise, visitor services, and visibility of the Service on Refuge lands.

Under Goal 8, Objective 8.3, we also promote an increase in the number of volunteers who will play an important role in fulfilling the mission of the Refuge. Our Friends Group and conservation partners are also vital to achieving our goals.

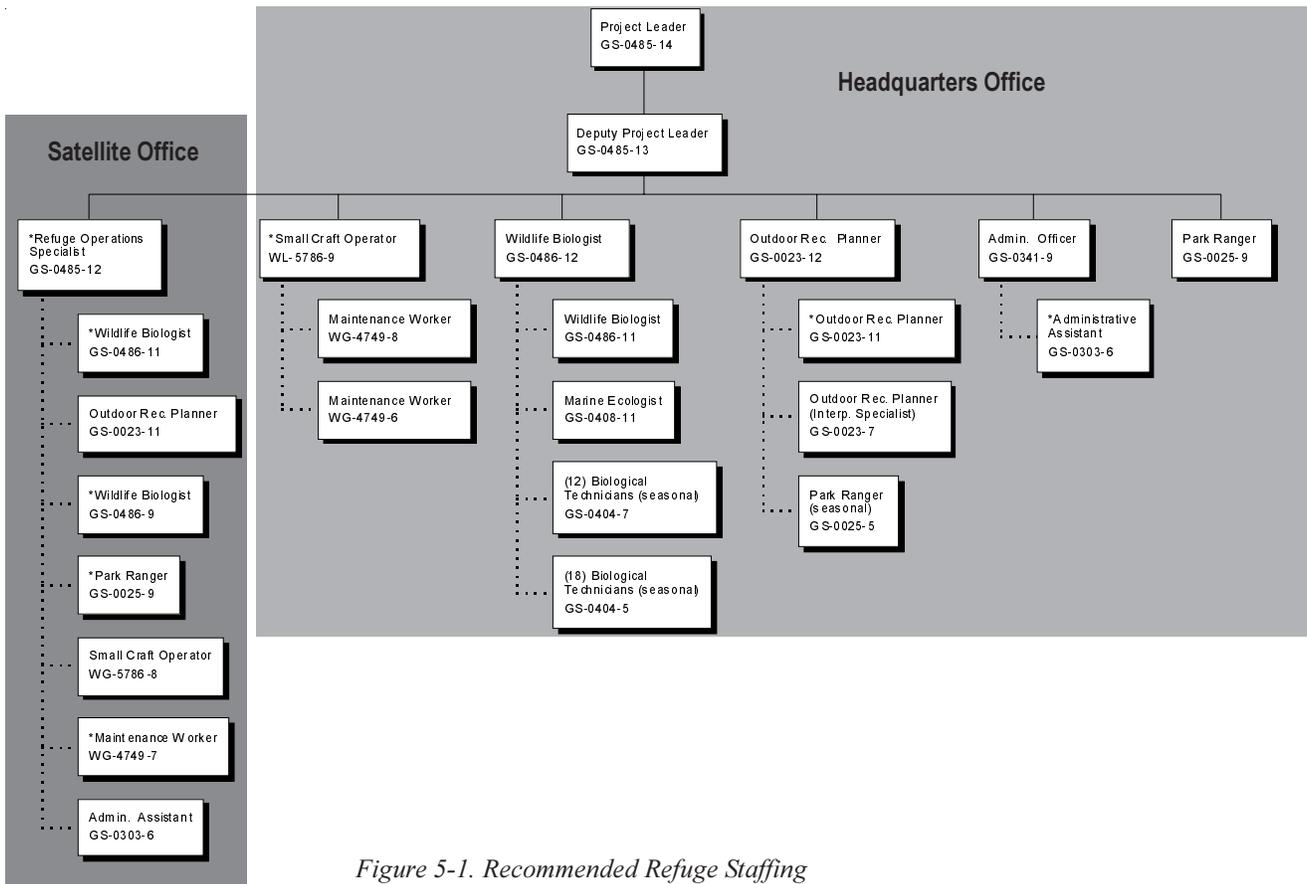


Figure 5-1. Recommended Refuge Staffing

Refuge Funding Needs

Successful implementation of the CCP relies on our ability to secure funding, personnel, infrastructure, and other resources to accomplish the actions identified. Full implementation of the actions and strategies in this CCP will incur an estimated one-time-cost of \$5,870,000 over the 15-year planning horizon. This includes staffing, major construction and restora-

tion projections, and individual resource program expansions. These projects and their recurring costs, such as staff salaries, are listed and prioritized in the Refuge Operations Needs and System (RONS) database (Appendix F). In this appendix, we also identify new projects that we will include in the RONS database with the next annual update. The source of funding for these projects and salaries primarily comes from Refuge Operations (1261) dollars.

Some of the projects may be eligible for funding from the Refuge Roads Program under the Transportation Equity Act for the 21st Century (TEA-21), a relatively new source of funding for the Refuge System. Examples include refuge public use roads, parking lots, bridges, restrooms, and trails. These funds can also be used for interpretive enhancements associated with these projects, as long as the costs for the interpretive facilities do not exceed 5% of the project budget. RRP funds can be used as the non-Federal match for FHA funds available through State Departments of Transportation. Refuges can also use appropriated Service funds as the non-Federal match for these funds as well. This matching ability can be used to further compatible city, county, and State transportation and transit funds for projects on or near the Refuge.

Land acquisition is an additional cost, which we project could be approximately \$25,000,000 to acquire all the lands identified in the Land Protection Plan (Appendix A). We expect the Land and Water Conservation Fund will be the principal source of funding for land acquisition. Assuming acquisition of all the islands, posting boundaries, and the equipment and staffing costs associated establishing six new seabird restoration sites, we projected one-time operating costs of \$325,000; estimated annual costs for operations and maintenance on these lands is \$82,500.

The projects in the Service's 2004 Maintenance Management System (MMS) database for the Refuge are additional projected costs (Appendix F). The 2004 MMS database lists \$1,778,000 in maintenance needs for the Refuge. The source of funding for these projects primarily comes from Maintenance Funds (1262) dollars. The Refuge System is transitioning to a new database in 2005. It is called Service Asset Maintenance Management System (SAMMS) and will be continuously updated.

Periodic maintenance and renovation of existing facilities is a critical need to ensure safety and accessibility for Refuge staff and visitors. Besides the historic lighthouses, dwellings, and outbuildings noted above under cultural resources, we will continue to maintain the following structures:

- one cabin on Cross Island, and two on Bois Bubert Island;
- a dwelling on Metinic Island;
- boat ramps and boardwalks on Matinicus Rock, Egg Rock, Petit Manan and Libby islands;
- Two Bush Island light (not designated historic);

- the John Hollingsworth Memorial and Birch Point foot trails on Petit Manan Point Division, parking lots; and,
- the Egg Rock seawall

Some of these facilities, namely the existing trails, will incur additional costs unknown at this time, associated with upgrades to be compliant with the Americans With Disabilities Act (ADA).

In addition, there is 1.1 mile of unpaved public road (Route #010) on Petit Manan Point which accesses the two trails. It has recently been maintained so is not currently on the MMS backlog list; however, future maintenance will be necessary within the 15 year planning horizon.

This CCP proposes many new projects for the next 15 years. It details a funding level that is substantially above current budget allocations, and, as such, is primarily beneficial for strategic planning and program prioritization. The CCP does not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.

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

The Service Manual, Part 602, Chapter 4 (Refuge Planning Policy) lists over 25 step-down management plans that are generally required on refuges. These plans contain specific strategies and implementation schedules for achieving refuge goals and objectives. Some plans require annual revisions, others are on a 5-to-10-year revision schedule. Some require additional NEPA analysis, public involvement, and compatibility determinations before they can be implemented. Our CCP incorporates the completed EAs, management plans, and current step-down plans, and listed below we provide the current status of step-down plans needed for the Refuge. Those that are currently up-to-date are incorporated by reference into this plan.

These step-down plans are current and up-to-date:

- Fire Management Plan and EA, 2002 (includes annual prescribed burn plan update and wildfire prescriptions)
- Safety Program and Operations Plan, 2000
- Continuity of Operations Plan, 1999
- Hunt Plan and EA, 2001
- Land Protection Plan (Appendix A), 2005

We will complete the following step-down plans, which are necessary components of implementing of our CCP (future Service policy may require additional plans):

- Habitat Management Plan; within 1 year of CCP approval (see discussion below)

- Habitat and Species Inventory and Monitoring Plan; within 2 years of CCP approval (see discussion below)
- Visitor Services Plan; within 2 years of CCP approval
- Facilities and Sign Plan; within 2 years of CCP approval
- Law Enforcement Plan; within 3 years of CCP approval
- Cultural Resources Management and Protection Plan; within 5 years of CCP approval
- Wilderness Stewardship Plan; within 2 years of Wilderness Designation

Habitat Management Plan

A Habitat Management Plan (HMP) for the Refuge is the requisite first step to achieving the objectives under Goals 1 through 6. For example, it will establish what specific actions are necessary to enhance, restore, and manage important habitats, and minimize impacts to species assemblages significant to the Refuge. It will also establish the timing for these actions and identify how we will define success. We will write the plan using current resource information, but will update it as needed, based on new information. It is the highest priority step-down plan to accomplish after this CCP.

Habitat and Species Inventory and Monitoring Plan

A Habitat and Species Inventory and Monitoring Plan (HSIMP) for the Refuge will also be a priority to complete. This plan is vital to measuring the success of meeting our objectives. It will outline the methodology we will use to assess whether our original assumptions and proposed management actions are, in fact, supporting our habitat and species objectives. Inventory and monitoring results will provide us with more extensive information on the status of the Refuge's natural resources. It will allow us to make more informed management decisions.

Land Protection Plan

We have developed a Land Protection Plan (Appendix A) in conjunction with this CCP. It identifies new areas approved for Service acquisition from willing sellers. It also identifies lands we have not yet acquired within our former approved Refuge. We believe acquisition of these lands is essential to meeting Refuge purposes and goals. These lands are not only important for their Federal trust resource values, but many would also make more effective boundaries for our management and administrative purposes. All lands acquired would become part of the Petit Manan Refuge.

In addition to Service acquisition, we will continue cooperating with our conservation partners to identify and protect areas of high biodiversity value important to Federal trust resources and other rare or declining species or plant communities. It is important that we work together and complement each other's land protection efforts given the limited funding and resources available.

Compatibility Determinations

Federal law and Service policy provide the direction and planning framework to protect the Refuge System from incompatible or harmful human activities, and to insure that Americans can enjoy Refuge System lands and waters. The Refuge Improvement Act is the key legislation regarding management of public uses and compatibility. The compatibility requirements of the Refuge Improvement Act were adopted in the Service's Final Compatibility Regulations and Final Compatibility Policy published October 18, 2000 (Federal Register, Vol. 65, No. 202, pp 62458-62496).

The regulations require that an affirmative finding be made of an activity's "compatibility" before such activity or use is allowed 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" (Refuge Improvement Act). Six priority, wildlife-dependent uses that are to be considered at each refuge are defined by the Act and Regulation. These are: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. These priority uses may be authorized on a refuge when they are compatible (as defined above), and not inconsistent with public safety. Not all uses that are determined compatible may be allowed. The Refuge Manager has the discretion to allow or deny any use based on other considerations such as public safety, policy and available funding. However, all uses that are allowed must be determined compatible. Except for consideration of consistency with State laws and regulations as provided for in subsection (m) of the Act, no other determinations or findings are required to be made by the refuge official under this Act or the Refuge Recreation Act for wildlife-dependent recreation to occur (Refuge Improvement Act).

Appendix C includes new and/or revised compatibility determinations for Refuge activities.

Monitoring and Evaluation

Monitoring and Evaluation of this CCP will occur at two levels. The first level, which we refer to as implementation monitoring, responds to the question, "Did we do what we said we would do, when we said we would do it?"

The second level of monitoring, which we refer to as effectiveness monitoring, responds to the question, "Are actions we proposed effective in achieving the results we had hoped for?" Or, in other words, "Are the actions leading us toward our vision, goals, and objectives?" Effectiveness monitoring evaluates an individual action, a suite of actions, or an entire resource program. This approach is more analytical in evaluating management effects on species, populations, habitats, refuge visitors, ecosystem integrity, or the socio-economic environment. More often, the criteria to monitor and evaluate these management effects will be established in step-down, individual project, or cooperator plans, or through the

research program. The Species and Habitat Inventory and Monitoring Plan will be based on the needs and priorities identified in the Habitat Management Plan.

Additional NEPA Analysis

The National Environmental Policy Act requires a site-specific analysis of impacts for all major Federal actions. These impacts are to be disclosed in either an EA or Environmental Impact Statement (EIS).

Many of the actions and associated impacts proposed in our CCP were described in enough detail in the Draft and Final EIS to comply with NEPA, and would not require additional environmental analysis. Although this is not an all-inclusive list, the following examples fall into this category: seabird restoration on islands, habitat diversity management on the mainland, expanding priority wildlife-dependent public use programs; acquiring land; controlling invasive plants, and managing predators.

A few of the proposed actions may not be described in enough detail to comply with the site-specific analysis requirements of NEPA. One example of a project that will require a separate NEPA compliant document is the construction of a new Refuge Headquarters and Coastal Education Center.

Adaptive Management

We will use a strategy of adaptive management to keep the CCP relevant and current through scientific research and management. We acknowledge that our information on species and ecosystems is incomplete, provisional, and subject to change as our knowledge base improves. The need for adaptive management is all the more compelling today.

“The earth’s ecosystems are being modified in new ways and at faster rates than at any other time in their nearly 4 billion year history. These new and rapid changes present significant challenges to our ability to predict the inherently uncertain responses and behaviors of ecosystems.” (Christensen, et al. 1996)

Objectives and strategies must be adaptable in responding to new information and spatial and temporal changes. We will continually evaluate management actions, both formally and informally, through monitoring and research to reconsider whether their original assumptions and predictions are still valid. In this way, management becomes an active process of learning what really works. It is important that the public understand and appreciate the adaptive nature of natural resource management.

The Refuge Manager is responsible for changing management actions if they do not produce the desired conditions. Significant changes may warrant additional NEPA analysis; minor changes will not, but will be documented in annual monitoring, project evaluation reports, or the Annual Refuge Narrative.

Plan Amendment and Revision

Periodic review of the CCP will be required to ensure that objectives are being met and management actions are being implemented. Ongoing monitoring and evaluation will be an important part of this process. Monitoring results or new information may indicate the need to change our strategies.

The Service's planning policy (FWS Manual, Part 602, Chapters 1, 3, and 4) states that CCPs should be reviewed at least annually to decide if they require any revisions (Chapter 3, part 3.4 (8)). Revisions will only be necessary if significant new information becomes available, ecological conditions change, major refuge expansions occur, or we identify the need to do so during a program review.

At a minimum, CCPs will be fully revised every 15 years. We will modify the CCP documents and associated management activities as needed, following the procedures outlined in Service policy and NEPA requirements. Minor revisions that meet the criteria for categorical exclusions (550 FW 3.3 C) will only require an Environmental Action Memorandum.

Appendices



Peregrine falcon

Photo courtesy of the Cornell Laboratory of Ornithology

Appendix A Land Protection Plan

Appendix B Species and Habitats of Conservation Concern

Appendix C Compatibility Determinations

Appendix D Wilderness Inventory and Study

Appendix E List of Preparers

Appendix F Refuge Operations Needs System (RONS) and
Management Maintenance System (MMS)

Appendix A



Blueberry barrens on the Petit Manan Point Division
USFWS photo

Land Protection Plan

- Introduction
- Project Area Description
- Status of Resources to be Protected
- Proposed Action
- Protection Options Considered
- Acquisition Methods
- Service Land Acquisition Policies
- Coordination
- Socioeconomic and Cultural Impacts
- Current Service Ownership and Proposed Acquisition

**Land Protection Plan
Petit Manan National Wildlife Refuge
April 2005**

I. Introduction

This Land Protection Plan (LPP) provides detailed information on our proposal to expand Petit Manan National Wildlife Refuge, which lies along the entire Maine coast. Petit Manan Refuge is part of the National Wildlife Refuge System (Refuge System) administered by the U.S. Fish and Wildlife Service (Service). It is the flagship refuge for the five-refuge complex we call Maine Coastal Islands National Wildlife Refuge (Refuge). Our targeted audience with this document is affected landowners, interested individuals, organizations, Federal and State agencies, and local officials. This proposal was distributed for a 60-day public review and comment period from April 30 to July 6, 2004. Comments we received helped our Director make a final decision regarding land acquisition. Once approved, this LPP will allow us to acquire an additional 2,459.7 acres from willing sellers, including 87 nationally significant Maine coastal nesting islands (2,306.4 acres) and 153.3 acres of important mainland wetlands habitat.

Specifically, the purposes of this LPP are to:

- inform affected landowners, and other interested parties, about the resource protection needs, location, size, and priority of the 87 nationally significant islands and mainland tracts we propose to acquire;
- inform landowners, whose properties are proposed for acquisition, about our policies, priorities, options, and methods for permanently protecting these lands;
- inform owners of inholdings within our currently approved boundary that we are interested in acquisition, and to remind them of our policies, priorities, options, and methods for permanently protecting these lands; and,
- emphasize the Service's policy of acquiring land only from willing sellers.

The 87 islands we propose for Service acquisition are considered nationally significant using a set of biologically-based criteria established by the Service, the Maine Department of Inland Fisheries and Wildlife (MDIFW), The Nature Conservancy (TNC), and Maine Coast Heritage Trust (MCHT). These islands currently lack permanent protection. We believe their high natural resource values merit inclusion into the Refuge System. As the Service acquires these islands, we would manage them for their wildlife resources, emphasizing the protection of Federal trust resources, such as Federal-listed endangered and threatened species and migratory birds.

II. Project Area Description

Existing Maine Coastal Islands National Wildlife Refuge

The Refuge includes 3,735 acres of mainland and 42 coastal islands (3,826.2 acres) which span the Maine coast. It supports an incredible diversity of biological communities ranging from forested and non-forested offshore islands, to coastal salt marsh, open field, and upland mature spruce-fir forest. These communities contain an impressive assemblage of native fish, wildlife, and plant species, including seabirds, shorebirds, wading birds, waterfowl, Neotropical migratory songbirds, raptors, and rare and declining plants. There are extensive intertidal habitats surrounding the islands that support large populations of migrating, wintering, and breeding shorebirds, wading birds, and water birds. Further, most of the islands provide undeveloped, predator-free terrestrial habitats which are immensely valuable as stopover habitat for migratory birds. These same conditions provide excellent nesting seabird habitat; in fact, we are internationally known for our nesting seabird protection and restoration program.

Five separate refuges comprise Maine Coastal Islands Refuge: Seal Island, Franklin Island, Pond Island, Cross Island, and Petit Manan National Wildlife Refuges. Seal, Franklin and Pond islands are single-island refuges. Cross Island Refuge is a six-island complex. Petit Manan Refuge is composed of 33 separate islands and three mainland divisions: Petit Manan Point (2,195 acres; Town of Steuben), Gouldsboro Bay (607 acres; Town of Gouldsboro), and Sawyers Marsh (933 acres; Town of Milbridge). A fourth mainland division, Corea Heath (400 acres; Town of Gouldsboro) is in the final stages of transfer from the U.S. Navy. Each of the refuges was established for the protection and conservation of migratory birds.

The Refuge headquarters is located in Milbridge, Maine. A second office is located in Rockport, Maine. Refuge islands lie in the following 20 towns and 7 counties: the Towns of Steuben, Milbridge, Jonesport, Addison, Machiasport, Roque Bluffs, and Cutler in Washington County; the Towns of Tremont, Winter Harbor, Swan's Island, and Gouldsboro in Hancock County; the Towns of Boothbay, Southport, and South Bristol in Lincoln County; the Towns of Vinalhaven, Saint George, and Friendship in Knox County; the Town of Phippsburg in Sagadahoc County; the Town of Harpswell in Cumberland County; and the Town of Kittery in York County.

The Refuge has acquired land through purchases, gifts from private individuals, land trusts, state and national conservation groups, and transfers of title from the Coast Guard and the U.S. Navy. Since 1993, we have acquired interests in 30 islands. All islands acquired since 1993 have become part of Petit Manan Refuge, although they may lie closer to other national wildlife refuges in Maine, such as Rachel Carson and Moosehorn. Our Regional Director determined that the Service would consolidate administration and expertise on off-shore Maine islands at Maine Coastal Islands National Wildlife Refuge.

Attachment A, Maps 1-11, depicts current Refuge lands and the private inholdings yet to be acquired within the currently approved boundary for Petit Manan Refuge. Table 1 provides a summary of these unacquired lands which remain a high priority for acquisition.

Table 1: A summary of lands within the approved Petit Manan Refuge boundary still in other ownerships.

Mainland Division or Island #	Coastal Island Registry Number (CIREG)+	Town	Number of Private Land Tracts	Upland Acres (USGS acres above mean high tide)
Petit Manan Point Division	N/A (mainland)	Steuben	2	24.6
Sawyers Marsh Division *	N/A (mainland)	Milbridge	1	95.0
Corea Heath	N/A (mainland)	Gouldsboro	1	400.0
Metinic Island	63-584	Matinicus Isle	6	150.0
Metinic Green Island	63-585	Matinicus Isle	1	8.7
Hog Island	63-588	Matinicus Isle	1	9.4
East Douglas Island	79-919	Milbridge	1	6.5
Middle Douglas Island	79-918	Milbridge	1	21.0
West Douglas Island	79-917	Milbridge	1	11.0
Jordan's Delight	79-922	Harrington	2	27.0
Major's Head	79-920	Milbridge	1	2.5
Turkey Island	79-913	Milbridge	1	2.5
Bois Bubert Island	79-824	Milbridge	7	32.0
TOTAL			25	790.2

Notes:

Acquisition has been on-going during development of this plan; Contact Refuge Headquarters for latest status. At final press time, Little Spoon, South Twinnie, Duck, and Hart Islands were acquired since the draft CCP/EIS was released.

+ CIREG is a coastal island registry number; a unique identifier assigned by the State of Maine.

* This Sawyers Marsh Division acreage figure includes tidal saltmarsh

Proposed Expansion Lands

Our proposal includes: 1) Service acquisition of 87 Maine coastal nesting islands (2,306.4 acres) considered nationally significant, but currently not in permanent protection; and, 2) acquisition of 153.3 mainland acres in two tracts with significant wetland and migratory bird values. All acquired lands would become part of the Petit Manan Refuge.

This proposal was developed in cooperation with MDIFW, TNC, MCHT, and after evaluating all conservation partners ability to acquire and manage coastal islands. It will make a significant contribution to the conservation of Federal trust resources in coastal Maine. Each of the islands has either nesting seabirds, including the only four known unprotected islands with historic nesting by the Federal-listed (endangered) roseate tern; or, the most productive nests by the Federal-listed (threatened) bald eagle. Many also have nesting colonies of wading birds. All of these are Federal trust species of conservation concern. Many islands also have rare plant communities; some are boreal species that are more common to harsh Arctic conditions. All the islands provide important foraging and resting habitat for migrating landbirds, shorebirds, wading birds, raptors, and/or waterfowl. They are also important for wintering bald eagles, black ducks, and sea ducks.

Table 2 presents an alphabetical listing of the 87 islands in our proposal with their nesting importance noted. These 87 islands lie along the entire Maine coastline, from approximately Kittery to Cutler. Attachment A, Maps 1-11, portray in solid red the islands and mainland parcels proposed for Service acquisition.

Appendix A – Land Protection Plan

Table 2: The 87 nationally significant islands proposed for Service acquisition and the presence of nesting birds

CIREG ¹	NAME	S ²	W ³	E ⁴	R ⁵	D ⁶	CIREG	NAME	S	W	E	R	D
81-191	APPLEDORE I	X	X			X	55-282	LT WHALEBOAT I		X			
59-036	BALD ROCK					X	55-283	LT WHALEBOAT I (SE)					X
63-802	BAR I	X				X	59-933	MAHONEY I	X				X
59-190	BEAN I		X	X			63-330	MOUSE					X
59-925	BEAR I			X			79-627	NASH I	X				X
79-626	BIG NASH I/CONE	X			X	X	63-421	OAK I					X
59-132	BLACK I			X			59-800	OUTER PORCUPINE I			X		
59-110	BUCKSKIN I			X			79-602	OUTER RAM I			X		
79-297	CAPE WASH I			X			79-787	PINKHAM I			X		
59-790	COMPASS I					X	59-347	POND I			X		
59-137	CONARY NUB	X			X		55-626	RAGGED I	X				X
63-505	CRANE I (S)			X			63-323	RAM I	X				X
63-651	CROW I			X			55-521	RAM I	X				X
59-448	CROW I			X			63-731	RAM I			X		
65-280	DAMARISCOVE I	X				X	77-045	RAM I			X		
79-412	DUCK LD I					X	79-623	RAM I			X		
81-010	EAGLE I	X				X	59-037	SALLY I					X
79-843	EASTERN I	X				X	63-730	SAND I			X		
59-956	EASTERN MARK I			X			59-836	SCRAGGY I		X			
79-464	FELLOWS I			X			73-320	SEGUIN I	X				X
79-694	FISHERMAN I	X				X	79-514	SHEEP I			X		
65-274	FISHERMAN I		X			X	59-039	SHEEP I			X		
79-621	FLAT I	X				X	79-835	SHEEP I			X		
63-264	FOG I			X			59-959	SHINGLE I			X		
81-101	FOLLY I	X				X	59-447	SISTER I (E)			X		
73-030	FREYEE I (W)			X			59-673	SPECTACLE I	X				X
73-308	FULLER RK					X	79-132	SPECTACLE I	X				X
59-398	GOOSEBERRY I					X	79-763	STROUT I			X		
63-634	GRAFFAM I		X				63-580	THE BROTHERS (C)				X	X
63-135	GREEN LD					X	63-581	THE BROTHERS (S)					X
65-200	HADDOCK I					X	63-579	THE BROTHERS N					X
63-701	HARBOR I	X					79-632	THE LADLE					X
59-450	HARBOR I			X			59-160	THE TWINNIES(N)			X		
65-019	HOG I			X			65-258	THREAD OF LIFE	X				X
79-393	HOPE I			X			59-980	THREE BUSH I	X				
55-381	HOUSE I					X	79-909	TRAFTON I		X			
63-626	LT HURRICANE I					X	55-427	TURNIP I					X
59-799	INNER PORCUPINE I			X			63-901	TWO BUSH I	X				X
59-351	JOHNS I			X			55-088	UPPER COOMBS I			X		
55-200	LANES I			X			59-675	WESTERN I	X		X		
63-655	LARGE GREEN I	X			X		81-015	WOOD I	X				X
63-418	LT GREEN I	X				X	63-917	WOODEN BALL I	X				X
63-654	LT GREEN I	X				X							
79-462	LT RAM I			X									
59-772	LT SPRUCEHEAD	X											

¹ coastal island registry number; a unique identifier established by the State of Maine

² nesting seabirds

³ nesting wading birds

⁴ nesting bald eagles

⁵ historic roseate tern nesting

⁶ diversity; three or more seabird species nest on the island.

III. Status of Resources to be Protected

There are over 4,617 islands along the Maine coast. Biologists from Federal, State, and non-governmental conservation organizations annually share data on seabird, wading bird, waterfowl, and bald eagle nesting sites across these islands. From this total, 616 islands have historical or current nesting populations of these birds. Of these 616 islands, 377 were determined to be nationally significant using the following criteria developed by the Service, MDIFW, TNC, and MCHT:

- 1% or more of the State population of a seabird species – common, roseate, or Arctic tern; Atlantic puffin; razorbill; black guillemot; black-backed, herring, or laughing gull; common eider; great or double-crested cormorant; or Leach’s storm-petrel – nests on the island; or
- 1% or more of the State population of a wading bird species – great blue heron, black-crowned night heron, snowy egret, glossy ibis, little blue heron, tri-colored heron, or cattle egret – nests on the island; or
- Federal-listed (endangered) roseate terns have historically nested on the island; or
- Federal-listed (threatened) bald eagles have productively nested on the island for several years (on larger islands only the immediate area around the nesting site, approximately 125 acres, is considered nationally significant); or
- the population of any one seabird species does not meet the 1% criterion, but;
 - √ four or more seabird species nest on the island; or
 - √ three species nest on the island, at least one of which has >0.5% of the statewide nesting population; or
 - √ the island has important seabird, wading bird, or eagle nesting habitat based on an annual biological review of the data.

This last criterion recognizes the value of nesting seabird diversity on individual islands. It is also important to recognize that these islands are valuable to a myriad of other Federal trust bird species for roosting and migration habitat; many of which are Partners in Flight species of high conservation concern (see below). Further, since most of the Maine coastal bald eagle pairs are year round residents, the forested islands provide important bald eagle wintering habitat.

Of the 377 islands considered nationally significant, 151 are currently lacking permanent protection. Opportunities to permanently protect, manage, restore, and enhance nesting populations on these islands are very limited to non-existent under present ownerships. The Service, MDIFW, and numerous conservation organizations are working cooperatively under a common goal to permanently protect all 151 islands. The two most significant factors presently affecting island protection is the lack of funding and available willing sellers.

Maine’s coastal nesting islands continue to face numerous threats and pressures. These include development of camps, homes, and other structures, recreational boating and kayaking, landings by commercial kayak and schooner tours, human presence during seabird nesting seasons, unleashed pets, and cultural resource exploitation.

Seabirds, wading birds, waterfowl, and many bald eagle nesting pairs require undisturbed environments during the nesting season. Closing refuge islands to public use during the nesting season is a management tool that we use to control this threat. Long-term protection of these nesting islands can only be assured through conservation ownership and management.

Service acquisition of these islands will minimize the threats noted above, and accomplish goals and objectives identified in many national and regional conservation plans and initiatives as described below.

Roseate Tern Recovery Plan, Northeastern Population (First Update 1998)

The primary recovery objective in this plan is to increase the northeast nesting population (U.S. and Canada) of the endangered roseate terns to 5,000 breeding pairs. This total should include at least six large colonies (greater than 200 pairs) with high productivity. The roseate tern population in Maine had a record high of 289 pairs recorded in 2001 with nesting on only 3-4 islands. Our current efforts strive to increase the nesting population and geographic distribution of this species in Maine. Our proposal would acquire four unprotected islands with documented historic nesting by roseate terns. In addition, many of the islands in our proposal would provide roosting and future nesting areas for these birds.

Northern Bald Eagle Recovery Plan (1983)

The primary recovery objective in this plan is to reestablish self-sustaining populations of bald eagles throughout the northern states region, including Maine. Specifically, we would permanently protect existing bald eagle nesting, foraging, roosting, and wintering areas on 35 islands. Attachment C provides a detailed description of the value of these islands for bald eagles.

Partners In Flight Plan for Area 28-Eastern Spruce-Hardwood Forest (June 2000)

This plan identifies migratory bird species and their breeding habitat in the eastern spruce-hardwood forest physiographic area that are a high conservation concern and priority for management. Our proposal would support priority species and habitat objectives identified in the plan for both the mainland and coastal islands including:

- *Maritime salt marsh and estuary*: These objectives emphasize maintaining stable populations of Nelson's sharp-tailed sparrow, American black duck, northern harrier, and osprey. The American black duck is a globally vulnerable Watch List species with a large proportion of its population in this region. Coastal marshes, mud flats, and rocky shores are important to wintering black ducks throughout the year. Exposed islands and high energy shorelines are especially important to wintering black ducks in the Gulf of Maine because these areas remain ice free during the coldest portions of the season. Our proposal would contribute to this objective through acquisition of these habitat types.
- *Mature conifer(spruce-fir) forest*: These objectives emphasize maintaining stable populations of black-throated green, northern parula and blackburnian warblers, spruce grouse, olive-sided flycatcher, boreal chickadee, pine grosbeak, and red crossbill. In Maine, the black-throated green, northern parula, and blackburnian warblers are focal species. Our proposal includes 35 forested islands, totaling 796 acres, which would contribute to this objective.
- *Coastal beach/dune/island/shoreline*: These objectives emphasize maintaining stable populations of common eider, roseate tern, common tern, Arctic tern, and osprey. The 52 seabird islands in our

proposal provide nesting habitat for eider and/or terns; and, all 87 islands would provide undeveloped and relatively undisturbed migration, feeding, and roosting areas.

Birds of Conservation Concern 2002 Report and the Atlantic Northern Forest Bird Conservation Region Blueprint (draft 2003)

This report was developed by the Service in consultation with the leaders of ongoing bird conservation initiatives and partnerships such as Partners in Flight, the North American Waterbird Conservation Plan, and the U.S. Shorebird Conservation Plan. It fulfills the mandate of the 1988 amendment to the Fish and Wildlife Coordination Act of 1980 requiring the Secretary of Interior, through the Service, to “identify species, subspecies, and populations of all migratory non-game birds that, without additional conservation action, are likely to become candidates for listing under the Endangered Species act of 1973.” The report includes numerous lists of birds of conservation concern, by national, regional, and landscape scales. We evaluated the list for the Atlantic Northern Forest Birds of Conservation Concern (BCR 14) region, and a recently released draft blueprint for BCR 14 which identifies key actions to implement in order to maintain healthy populations of birds native to the region. In this region, sixteen bird species are listed, of these, the razorbill and common tern utilize nationally significant coastal nesting islands. Five islands in our proposal have documented nesting by these two seabird species; the majority of the others have potential nesting habitat for at least one of the species.

North American Waterfowl Management Plan (update 2004) and Joint Ventures

The North American Waterfowl Management Plan identifies 13 priority waterfowl species. Seven of these species use Refuge lands and nearby habitat during migration; four species use Refuge lands for nesting; and, three use it for wintering habitat. These include Atlantic brant, mallard, American black duck, northern pintail, wood duck, ring-necked duck, and common eider. Our proposal would permanently protect wetlands and ensure the continued existence of breeding, feeding, resting, and wintering habitat for these species.

Implementation of the North American Waterfowl Plan is accomplished at regional levels within 15 habitat and 3 species Joint Venture partnerships. Our project area lies within the Atlantic Coast Joint Venture which divides the entire Maine coast into five focus areas and establishes a waterfowl goal to “protect and manage priority wetlands habitats for migration, wintering and production of waterfowl, with special consideration to black ducks...” The Black Duck and Sea Duck Joint Ventures are also relevant to our project. These plans emphasize the protection of migration and wintering habitats in Maine which exists on most of the islands in our proposal. Our proposal also includes nesting habitat for common eider.

Gulf of Maine Rivers Ecosystem Team Plan (1994)

This plan establishes priorities for the interagency Gulf of Maine Rivers Ecosystem Team. Our proposal would directly benefit two of the plan’s seven resource priorities. These include Resource Priority #1: recovering populations of endangered and threatened species; and Resource Priority # 4: protect, enhance, and restore populations of migratory bird species of special concern and their habitats. The seabird species we have targeted in our proposal are unique to the Gulf of Maine and permanent protection of these islands is an important priority of the Gulf of Maine Rivers Ecosystem Team.

Northern Atlantic Regional Shorebird Conservation Plan (Draft 2002)

The goal of this plan is to maintain or enhance current or historic population levels and diversity of shorebirds throughout the North Atlantic Region through cooperation and partnership with Federal, State, private, and non-governmental conservation organizations. A separate habitat goal is to protect and manage sufficient area of high priority habitats to support current populations of breeding, migrating, and wintering shorebirds. Our proposal would permanently protect breeding habitat for 6 of the 38 shorebird species on the Species Priority List for the region. These include American oystercatcher, American woodcock, willet, spotted sandpiper, common snipe and killdeer. All 38 species utilize the islands for foraging and roosting during migration. At least 12 islands in our proposal are used extensively by shorebirds. The Sprague Neck mainland tract is considered by MDIFW as an area that receives the highest concentration of migrating shorebirds in the State. Finally, our proposal would provide important wintering habitat for purple sandpiper. To document this importance, we are currently cooperating with MDIFW and Acadia National Park on a wintering habitat project for purple sandpipers.

North American Waterbird Conservation Plan (Version 1, 2002)

This plan identifies 55 priority “species of concern” in North America. Our proposal supports the plan’s species and population goal to have sustainable distributions, diversity, and abundance of waterbirds throughout North America and to restore populations of priority species, including those in decline. In addition, our proposal would support the plan’s habitat goal to secure, maintain, and enhance sufficient high quality habitat throughout the year to achieve and maintain sustainable populations of waterbirds throughout North America.

Islands in our proposal support current or historic nesting by at least one of the following species on the highly imperiled/high concern list: Arctic tern, roseate tern, snowy egret, and little blue heron. These islands may also support nesting by the following two species on the moderate concern list: black-crowned night heron and razorbill.

MDIFW Species Assessments and Management Plans

MDIFW has developed species assessment and management plans for migratory shorebirds, passerines, Atlantic puffin/razorbill, Leach’s storm-petrel, common eider, harlequin duck, waterfowl, island nesting terns, and American bald eagle. Our proposal is consistent with these plans by supporting permanent habitat protection for these species.

IV. Proposed Action

Islands

Our proposal is to acquire 87 islands (2,306.4 acres) selected from the list of 151 nationally significant coastal nesting islands in Maine currently lacking permanent protection.

These 87 islands will be acquired from willing sellers with support from our conservation partners. We believe 87 islands represents a realistic objective over the next 15 years given the historic rate of

acquisition. We will continue to work cooperatively with the State and our conservation partners to seek ways of permanently protecting the remaining 64 nationally significant islands.

Attachment A includes Maps 1-11 with our proposal in red. Attachment B provides an alphabetical listing of the 87 islands along with other island information we thought would be of interest including:

- coastal island registry number (CIREG)
- town
- Attachment A map #
- current ownership (private, Coast Guard (CG) or U.S. Navy)
- acreage
- Service's priority for acquisition
- proposed acquisition method

All of the 87 nationally significant coastal nesting islands in our proposal are privately owned except an 8-acre tract on Wood Island owned by the Coast Guard (see Attachment B). We are excluding this 8-acre tract, which includes an historic lighthouse from our proposal at the Coast Guard's request. We placed each island in one of two priorities for acquisition: Priority 1 or Priority 2. There are 52 islands identified as Priority 1. These are either islands with nesting seabirds, wading birds, and waterfowl, or any unacquired island parcels within our currently approved acquisition boundary (Table 1). There are 35 islands identified as Priority 2. All of these are high productivity nesting bald eagle islands recommended by MDIFW.

We will use this priority ranking only in the circumstance where two islands are available for acquisition, and we only have funding to purchase one. These priorities do not reflect a landowner's preference to sell the land. Since Service policy is to acquire land only from willing sellers, the order of actual land acquisition will be based on availability and funding.

Mainland

Our proposal is to acquire two mainland tracts of land totaling 153.3 acres that are not currently within the approved Petit Manan Refuge boundary.

The 150-acre Sprague Neck parcel located in the Town of Cutler, Washington County is part of the U.S. Navy's former Computer and Telecommunications Station Center (Center). It is scheduled for a no-cost transfer to the Department of the Interior (DOI) as a result of recently enacted legislation that transferred most of the Center to the Town of Cutler. The parcel juts into Machias Bay and consists of a headland connected to the mainland by a low-lying isthmus. This headland, consisting primarily of spruce-fir forest, grades to a boulder/cobble beach along the upper shoreline. The shoreline along the northern side, which is not exposed to the ocean, consists of a cobble bar with sandy beaches. At low tide, the vast mud flats adjacent to these sand and gravel bars are exposed to provide important migration and roosting habitat for 19 species of shorebirds, including the black-bellied plover, semi-palmated plover, and the buff-breasted sandpiper. More migratory shorebirds are found on Sprague Neck than anywhere else in Maine. A portion of this property has been designated an "ecological reserve" by the U.S. Navy. This parcel lies within the Little Machias Bay, identified as a focus area in

the North American Waterfowl Management Plan Joint Venture and ranked second of 32 sites within Maine in the Atlantic Coast Black Duck Wintering Habitat Plan.

The second mainland parcel is a 3.3 acre parcel of land referred to as the Litten tract. It is currently a private tract surrounded by the Gouldsboro Bay Division of the refuge. This parcel contains a mixed forest of hardwoods and softwoods and has a rocky shoreline along West Bay in Gouldsboro. Service acquisition of this parcel will create an administratively intact boundary for this Division. Both Sprague Neck and the Litten parcel are identified as Priority 1. All unacquired mainland parcels within our currently approved refuge boundary are Priority 2, with the exception of Sawyers Marsh and Corea Heath which are Priority 1 (Table 1).

V. Protection Options Considered

According to Service policy (341 FW1), we can acquire land and water interests such as, but not limited to, fee title, easements, leases, and other interests. We considered each of these while evaluating three options before developing our proposed action, presented in detail in Attachment A and B. Our policy is to acquire only the minimal interest necessary to meet Refuge goals and objectives, and to acquire land only from willing sellers. We believe our proposed action is a cost-effective way of acquiring the interest to provide the minimal level of protection needed to meet objectives, given the information now available to us. However, as individual islands become available in the future, changes in their protection option may be warranted to ensure we are using the best option at that time.

Option 1. No Expansion of Current Service Boundaries; Emphasis on Protection by Others

Under Option 1, we would acquire 3 additional mainland parcels and 21 additional island parcels within the existing approved refuge acquisition boundaries; we would not expand the Refuge boundary or protect additional islands. Our final EIS evaluates this “no new expansion” option in Alternative D.

Under this option, we would work with other conservation organizations and agencies, such as MDIFW, MCHT, TNC, National Audubon Society, and local land trusts, to support their land protection and management programs of mutual interest and benefit to the Service.

Our concern with this option is that although ownership by those groups affords some level of protection, it is unlikely they would have the financial or administrative resources to buy all 151 significant islands, nor could they actively manage all these islands as needed to protect the Federal trust species of concern. Without our contribution to land protection, many nationally significant islands would likely be developed. These groups, and the public, have stated that Service acquisition and management is vital to ensuring the long-term protection of nationally significant coastal nesting islands.

In summary, we do not propose to utilize Option 1 because:

- It would detract from our goal to protect Federal trust resources on the Refuge and throughout Maine coastal nesting islands;
- It does not support the Refuge’s vision, goals, and objectives; and
- It is not supported by the MDIFW and the majority of the public, partners, or elected officials.

Option 2. Less-than-full Fee Acquisition by the Service

Under Option 2, we would protect and manage all islands by purchasing only a partial interest, typically in the form of a conservation easement. This option keeps the island in private ownership, while allowing us some control over land use. We would have to determine, on a case-by-case basis, and negotiate with each landowner, the extent of the rights we would be interested in buying. Those may vary, depending on the configuration and location of the island, the current extent of development, the nature of wildlife activities in the immediate vicinity, the needs of the landowner, and other considerations.

We propose to utilize conservation easements on the 35 islands identified in Attachment B. These easements would consist primarily of purchasing development rights and the right to control public access during the nesting season on bald eagle nesting islands. Easements are most appropriate for use where:

- The island is large and only minimal management of the habitat is needed, and where development is the greatest threat, such as those large islands that have bald eagles nesting on a small portion of the island;
- The island owner wants to maintain ownership; or
- Only a portion of the parcel contains lands of interest to the Service.

Option 3. Full Fee Title Acquisition by the Service

Under Option 3, we would purchase fee title from willing sellers, thereby purchasing all rights of ownership. This option provides us the utmost flexibility in managing priority islands, and ensures permanent protection of nationally significant Federal trust resources. Generally, the islands we would buy require active management. We propose fee acquisition when: 1) adequate land protection is not assured under other ownerships; 2) active land management is required; or 3) the island is too small to purchase a conservation easement. Attachment B identifies 52 nesting islands that we propose to acquire full fee title. Lands acquired in fee would be managed similar to our existing Refuge lands in terms of what public uses are allowed to occur and the seasonal access restrictions implemented to protect resources.

It should also be noted that as future transactions occur, a conservation easement could be converted to full fee title acquisition. For example, we may pursue full fee title when an owner is interested in selling the remainder of interest in the island; when changes to zoning or land use regulation compromise resource values; or, when our management objectives change so that more active management is necessary to meet goals and objectives. We will evaluate this need on a case-by-case basis.

VI. Acquisition Methods

We typically acquire the Service interest using one of the following methods: (1) purchase (e.g. complete title, or a partial interest, like a conservation easement), (2) donations, (3) exchanges, and (4) transfers.

Purchase

We are proposing to purchase either a fee title or conservation easement on the 87 islands, and the Mainland Litten tract, identified in Attachment B, because at this time, we cannot anticipate opportunities for the other three methods.

Purchase involves buying a full (fee title) or partial interest (e.g., conservation easement) in land from willing sellers, as our funding permits. Fee title ownership assures the permanent protection of resources, and allows the complete control necessary for habitat management activities, providing public use opportunities, and managing public access.

As we mentioned under Option 2 above, a conservation easement refers to the purchase of limited rights from an interested landowner. For example, the landowner would retain ownership of the land, and would sell certain rights, such as development rights, to the Service, after agreement by both parties. Easements are property rights and are usually permanent. If a landowner sells his/her property, the easement continues as part of the title. Properties subject to easements generally remain on the tax rolls, although the assessment may be reduced by the reduction of market value if the town gives the landowner a tax abatement for the easement.

Our conservation easement objectives would assure the permanent protection of resources and allow for the minimum control necessary for management activities. Generally, we would purchase at least the development rights and the ability to control access during the nesting season.

Much of our funding to buy land in either fee or conservation easement comes from the Land and Water Conservation Fund, which is composed of certain user fees, proceeds from the disposal of surplus Federal property, the Federal motor boat fuels tax, and oil and gas lease revenues. About 90 percent of that fund now originates from Outer Continental Shelf oil and gas leases. Another source of funding is the Migratory Bird Conservation Fund, which is derived from Federal Duck Stamp revenue. We plan to primarily use the Land and Water Conservation Fund to purchase land identified in our proposal.

Donation

We generally encourage donations in fee title or conservation easement for lands, providing that management concerns, such as contaminants, are not a major issue. Presently, we are not aware of any opportunities to accept donations.

Exchange

We have the authority to exchange land in Service ownership for other land that has equal or greater wildlife habitat value. Inherent in this concept is the requirement to get dollar-for-dollar value, with occasionally, an equalization payment. Exchanges are attractive because they usually do not increase Federal land holdings or require purchase funds; however, they also may be very labor-intensive, and take a long time to complete. Presently, we are not aware of any opportunities to do an exchange.

Transfer

We have accepted transfer of military and Coast Guard lands declared excess, including most recently four lighthouse islands, transferred to the Service under the Maine Lights Bill legislation in 1996. Corea Heath is in the final stages of a negotiated transfer from the U.S. Navy. It is possible that we

could also acquire Sprague Neck as a transfer from the U.S. Navy. Other Coast Guard land transfers have occurred under the Coast Guard Reauthorization Bill.

VII. Service Land Acquisition Policies

Once a new refuge acquisition boundary is approved by our Director, we contact affected owners to determine if they are interested in selling their property. If an owner expresses an interest, an appraiser will be enlisted to appraise the property to determine market value. Once the appraisal process is completed and funding becomes available, we can present an offer for the landowner's consideration. Lands within the boundary do not become part of the Refuge System unless sold, donated, or transferred to the Service.

While the Service has the power of eminent domain (also termed condemnation), Service policy (342 FW 6) is to acquire land through this means as a last recourse only to:

- determine the legal owner (clear title);
- settle a difference of opinion regarding value (when owner is agreeable to court action); or
- prevent uses which would cause irreparable damage to the resources that the refuge was established to protect.

Appraisals would be conducted by the Office of Appraisal Services, National Business Center, Dept. of Interior, and must be performed pursuant to the Uniform Appraisal Standards for Federal Land Acquisitions or the Uniform Standards of Professional Appraisal Practice. It is required by law to appraise properties at market value, based on comparable sales of similar types of properties.

A landowner may choose to sell fee title interest to the Service, but retain the right to occupy an existing residence, referred to as a "life-use reservation." As its name implies, life-use reservations apply to the seller's lifetime, but they can also apply for a specific number of years. After the appraisal is approved, and prior to making the offer, we would discount from the appraised value of the buildings and land, a value for life use based on the age of the owner, and the term of the reservation. The occupant would be responsible for the upkeep on the reserved premises.

VIII. Coordination

In 1993, we began to evaluate the need for additional protection of Maine coastal nesting islands. In 1995, we initiated an Environmental Impact Statement (EIS) to study the protection of significant seabird, wading bird, and eagle nesting islands on Maine's coast. This effort was officially announced through a Federal Register Notice of Intent.

Throughout 1995, four public forums and six public scoping meetings were held in Ellsworth, Machias, Owls Head, Rockport, Brunswick, Freeport, Wells, and Augusta, Maine. The locations, dates, and times for these meetings were announced in local newspapers, as well as through special mailings. Over 250 people attended the public forums, co-sponsored by the Service and 33 additional groups interested in promoting protection of coastal islands. More than 60 people attended the scoping meetings, the purpose of which was to let people know what the Service was doing and share what we have learned about coastal nesting island wildlife and their habitats. Also during 1995, over 1,100 copies of an Issues Workbook were distributed. These workbooks asked people to share what

they valued most about the islands, their vision for island protection in the future and the Service's role in that future, and any other island issues they wanted to raise. One hundred and forty copies of the workbooks were returned to us. We summarized the information and shared the results in a Project Update newsletter in May 1996.

Also in May 1996, the Service held a two-day facilitated workshop at the Bar Harbor Inn in Bar Harbor, Maine. The 24 participants included island owners, local land trusts, conservation organizations, town officials, sea kayaking companies, tour boat operators, representatives from the aquaculture industry, property rights supporters, and State and Federal agency representatives. The participants discussed the information gathered on seabird, wading bird, and eagle populations and island ownerships, as well as the results of the workbook

In the summer of 1999, a new planning team was formed to produce a draft Comprehensive Conservation Plan consistent with the Service's new planning policy. This new effort broadened the scope of the original EIS to include not only island acquisitions, but goals and objectives for managing current Refuge lands. The new planning team reviewed the 1995 list of issues and concerns for the project, expanded the scope of the project to include issues on existing refuge lands, and prepared to gather additional comments from the public.

We held five public meetings and open houses in Augusta, Milbridge, Brunswick, and Rockport in 2000. A newsletter shared the comments from the open houses with the 1,400 individuals and organizations on our mailing list. Following the public meetings, the planning team met to draft and refine elements of our management alternatives. Our next newsletter, published at the end of 2001, shared our draft alternatives with the public. At publication, we presented five management alternatives, but after further analysis, we determined that one of the alternatives was not significantly different than the others. All the significant components of this alternative were included in the other four alternatives. Therefore, our draft and final EIS includes analysis of four alternatives.

We published our Draft CCP/EIS, including the LPP, and released it for 68 days of public review and comment from April 30 to July 6, 2004. We notified everyone on our project mailing list of the document's availability and published a notice in the "Federal Register" on April 30, 2004. The document was also posted on our National Conservation Training Center Library website (http://library.fws.gov/CCPs/petitmanan_index.htm). In addition, we held four formal public hearings on the following dates and locations:

June 1, 2004: Rockland Public Library, Rockland, ME

June 2, 2004: Milbridge Town Hall, Milbridge, ME

June 8, 2004: Pine Tree State Arboretum, Augusta, ME

June 9, 2004: Falmouth Public Library, Falmouth, ME

Eighty-five people attended the public hearings and 30 gave oral testimony. Some submitted their comments in writing instead of giving oral testimony, while others did both. More comments arrived later by post or electronic mail. In total, we received 594 public responses. The Final EIS, Appendix I, is a summary of the substantive comments we received and our response to them. None of the comments on land acquisition resulted in a significant change to our original LPP proposal. Between the draft and this final LPP, we fixed some typographical errors, clarified some terminology, excluded the 8-acre Coast Guard tract on Wood Island from our proposal at their request, and introduced the new name for the five-refuge complex, Maine Coastal Islands NWR, which includes Petit Manan NWR.

Throughout our CCP/EIS planning process, we solicited and carefully considered public comments on Service land acquisition. We worked with the MDIFW, statewide conservation organizations, local municipalities, local land trusts and national conservation organizations who are directly involved in land protection strategies in coastal Maine. Their continuing work will preserve additional nationally significant coastal nesting islands not acquired by the Service. Specifically, the State helped us develop the land protection proposal and prioritize islands for Service acquisition.

IX. Socioeconomic and Cultural Impacts

It is said that Maine's seacoast is the backbone of the State's economy. This is not surprising as coastal Maine's southern and mid-coast regions are growing at a faster rate (1.7 percent during 1990-1996) than the state as a whole (0.9 percent during 1990-1996) with the majority of the State's 1.2 million people (State Planning Office, 2000) living in coastal counties. Most certainly it is the natural beauty and rich resources of the shore and ocean that draw people to the coast.

In our final EIS, Chapter 4 - Environmental Consequences, we describe in detail the socio-economic consequences of our proposed expansion, including impacts to property taxes, additional local revenues generated, and the implications to commercial wildlife viewing, hunting, sheep farming, aquaculture, public access, educational, and recreational opportunities.

The Refuge contributes directly to the economies of several towns in coastal Maine. Since 1935, the Service has made Refuge Revenue Sharing (RRS) payments to counties or towns for refuge land under its administration. Lands acquired by the Service are removed from the tax rolls. However, under provisions of the Refuge Revenue Sharing Act, as amended, the county or other local unit of government receives an annual revenue sharing payment which can sometimes equal or exceed the amount that would have been collected from property taxes if in private ownership. In 2001, the Service paid \$51,134 to Maine communities for lands under administration of the Refuge. Assuming full expansion, our proposal would distribute an additional estimated \$50,786 annually to 42 Maine town's in RRS payments, assuming the 2002 distribution rate allocated by Congress. We enlisted Dr. Charles Colgan, an economist from the University of Southern Maine, to help us determine net property tax impacts to towns, given these RRS payments (Re: final EIS, Appendix G, for full report). According to Dr. Colgan, overall, the property tax impacts are small. If all 87 islands are acquired by the Service, the property taxes would rise in affected towns by approximately \$130,000, an average of 0.05%, assuming RRS payments at the 2002 levels. The town with the largest absolute reduction in taxes would be the Town of Kittery at \$30,738; however, the Town of Frenchboro would be the most affected in proportional terms; approximately \$6,234 or 9.0% increase in their mil rate. Dr. Colgan has acknowledged that these property tax impacts may be low due to an underestimation of actual values since his analysis was based primarily on 2002 and 2003 values and the coastal real estate market has been very dynamic in recent years.

Our proposal affects other socio-economic components as well. Wildlife-dependent uses of Maine islands include consumptive and non-consumptive recreational activities. Consumptive activities include sport hunting for waterfowl (including eiders), upland gamebirds, and deer, as well as fishing and shell fishing. Our proposal would allow waterfowl hunting; however, hunting game birds and deer is not viable on the off-shore islands, and fishing and shell fishing would occur in State waters. We would allow non-consumptive recreation activities such as photography and wildlife observation, picnicking, personal-use berry picking, and hiking. Camping would not be allowed on all newly

acquired islands. Allowed activities would occur outside the seabird nesting season from April 1st - August 31st, or the bald eagle nesting season from February 15th - August 31st. The only exception to the closure period is on eider- and gull-nesting islands which would be closed from April 1st - July 31st.

The industries of coastal Maine potentially affected by Refuge management includes aquaculture, lobstering and other commercial fisheries, commercial seabird viewing activities, other natural resource-based industries such as timber and blueberries, environmental education, real estate and land development. During our public scoping, we heard particular concern with any potential impacts to aquaculture operations by our proposal. We describe some of these impacts in Chapter 4 of the final EIS. However, we did not predict any direct impacts on current operations, and we have no jurisdiction with issuing future aquaculture leases; the responsibility lies with the U.S. Army Corps of Engineers (ACOE) and the Maine Department of Marine Resources. During the lease review process, our Ecological Services Maine Field Office consistently recommends that all aquaculture facilities lie at least 1/4 mile away from Federal-owned islands; however, the ACOE leases do not always require this. As such, Service acquisition of islands has some potential to affect future lease locations, but would not affect any current leases. With regards to the other industries noted above, our proposal would not result in any adverse impacts. Rather, it would support the seabird viewing and environmental education industries

The Service routinely reviews and assesses archaeological and historic sites under Section 106 of the National Historic Preservation Act (NHPA) when ground disturbing activities are likely. At the Refuge, these reviews have been confined to architectural rehabilitation of lighthouse structures on four Refuge islands. Our proposal includes acquisition of one island that contains a lighthouse (Seguin island). If this island becomes available to us, we would negotiate an easement enabling the current landowner, or an historic preservation entity, to retain responsibility for any historic structures, assuming this arrangement poses no risk to the Federal trust resources we are trying to protect.

As is generally the case in coastal settings, the area is potentially rich in archaeological resources. While no archeological sites are known on the Refuge that meet NHPA criteria, there has not been an intensive survey done on Refuge lands. It is entirely possible there are unrecorded coastal archaeological sites on current Refuge lands and those proposed for acquisition. Our proposal would increase protection for cultural resources since these lands would not be developed and because we adhere to the protection requirements of the NHPA. We will work closely with the Passamaquoddy Tribes (Pleasant Point and Indian Township Reservations) and other Wabanaki tribes to identify, protect, and interpret, cultural resources. Service ownership would help protect known sites against vandalism, and would permanently protect as yet unidentified, or undeveloped cultural sites from disturbance or destruction. Our interpretive and environmental education programs will also continue to promote public understanding and appreciation of the area's rich cultural resources.

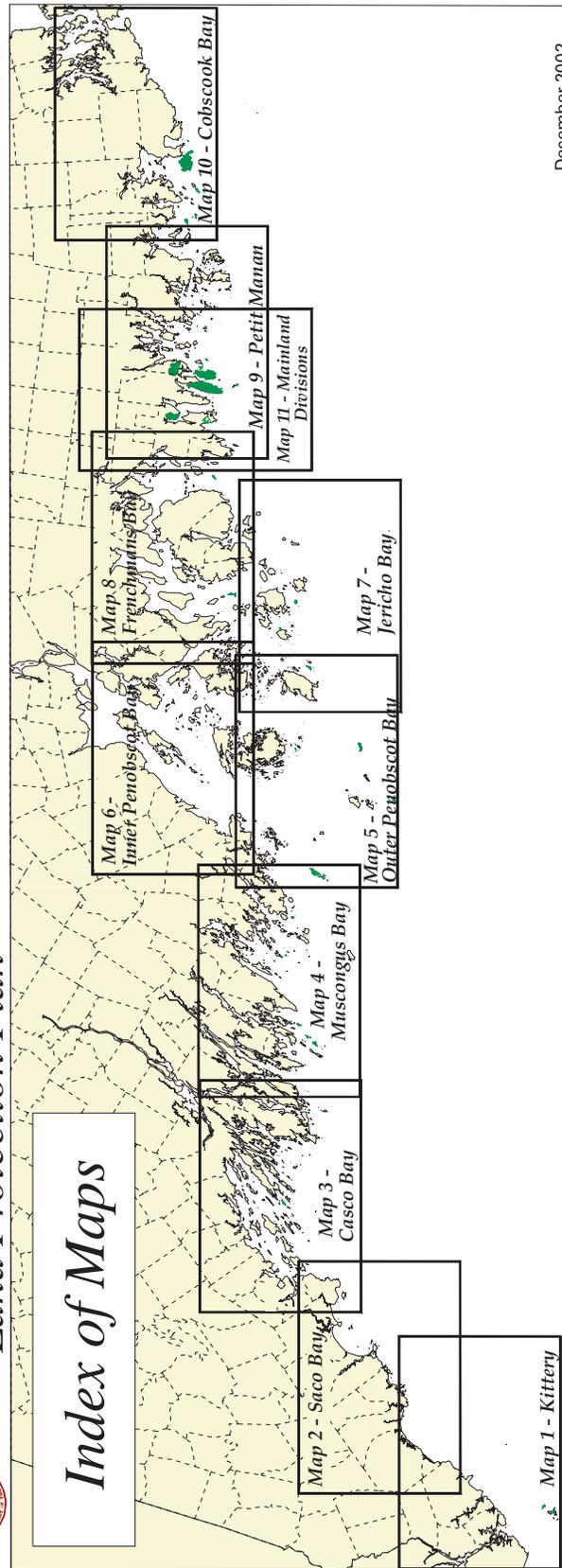
In summary, we do not predict any significant adverse socioeconomic or cultural impacts from our proposed action. Further documentation is provided in the final EIS, Chapter 4 - Environmental Consequences.

Attachment A. Current Service Ownership and Proposed Acquisition

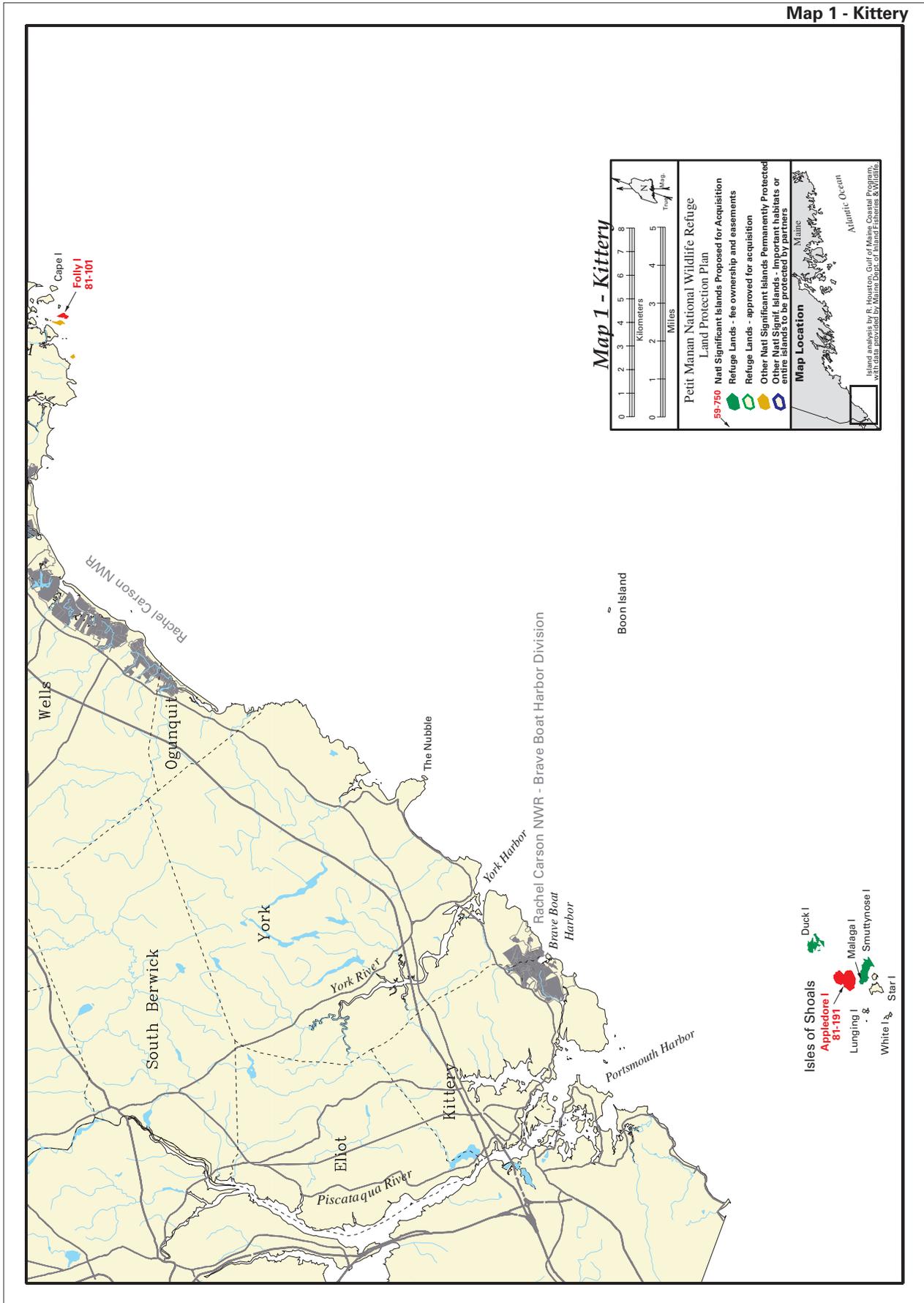
The eleven maps in Attachment A show the mainland and islands that are currently part of the Refuge (solid green); the mainland and islands approved but not yet acquired (outlined in green); and, the mainland and islands that we propose for Service acquisition (solid red) as an expansion to Petit Manan National Wildlife Refuge.

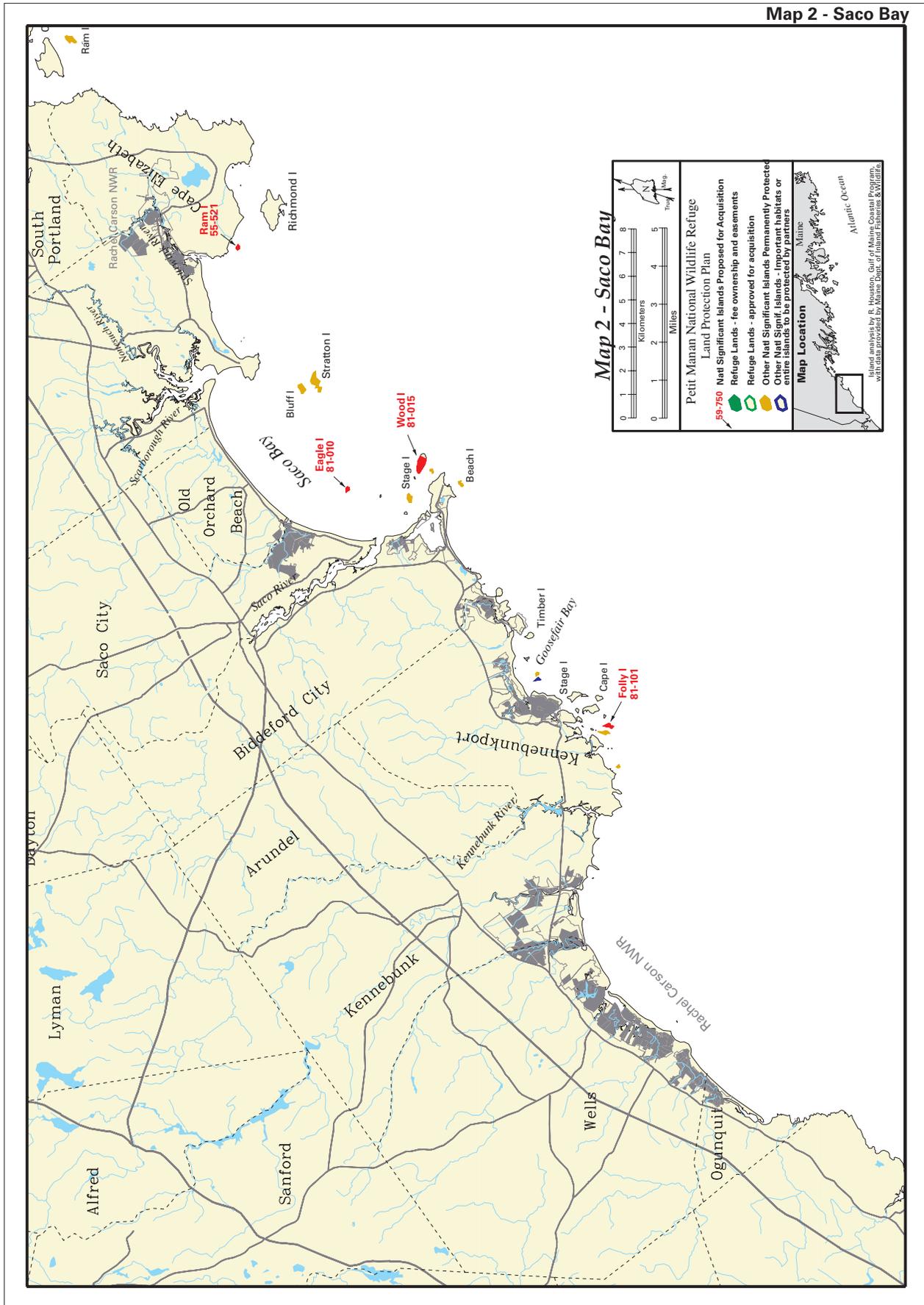
It should be noted that Service acquisition of islands within the existing approved boundary (outlined in green) has been on-going during development of this final EIS. Please contact Refuge Headquarters for the latest update.

*Petit Manan National Wildlife Refuge
Land Protection Plan*

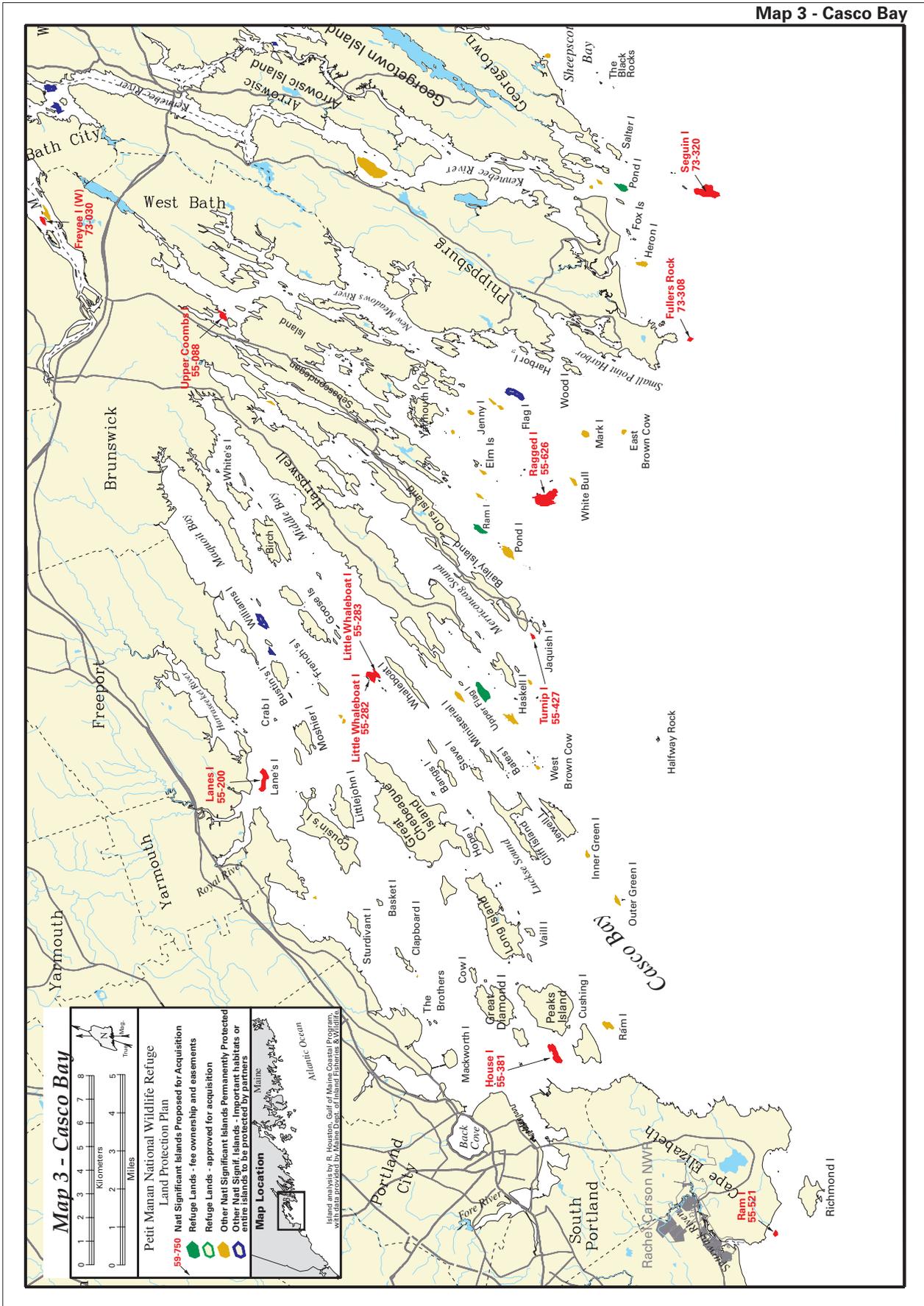


Index of Maps





Map 3 - Casco Bay



Map 3 - Casco Bay

Scale: 0 to 8 Kilometers / 0 to 5 Miles

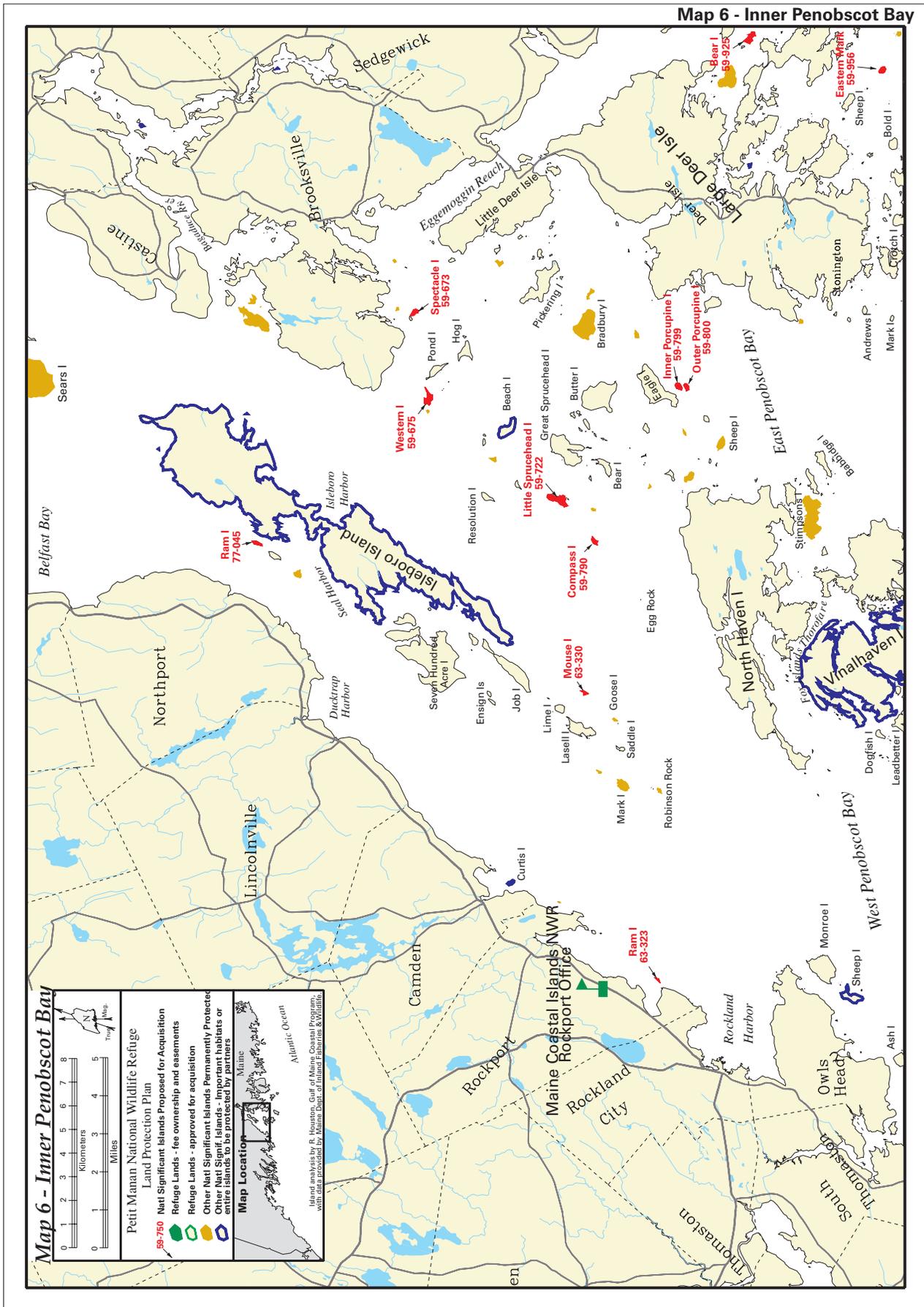
Pett Manan National Wildlife Refuge Land Protection Plan

- 59-750 Nat Significant Islands Proposed for Acquisition
- Refuge Lands - fee ownership and easements
- Refuge Lands - approved for acquisition
- Other Nat Significant Islands Permanently Protected
- Other Nat Signif Islands - Important habitats or entire islands to be protected by partners

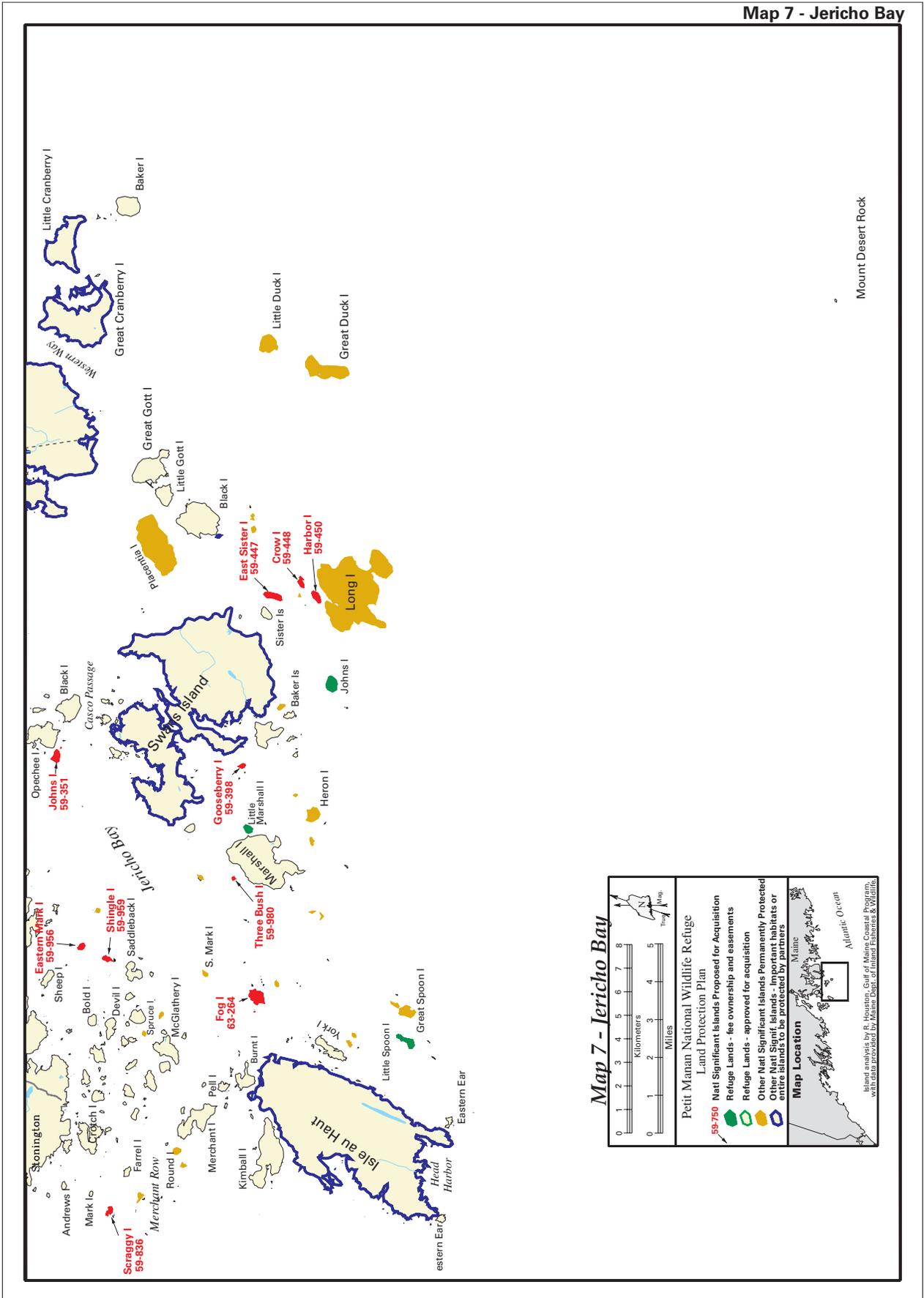
Map Location

Atlantic Ocean

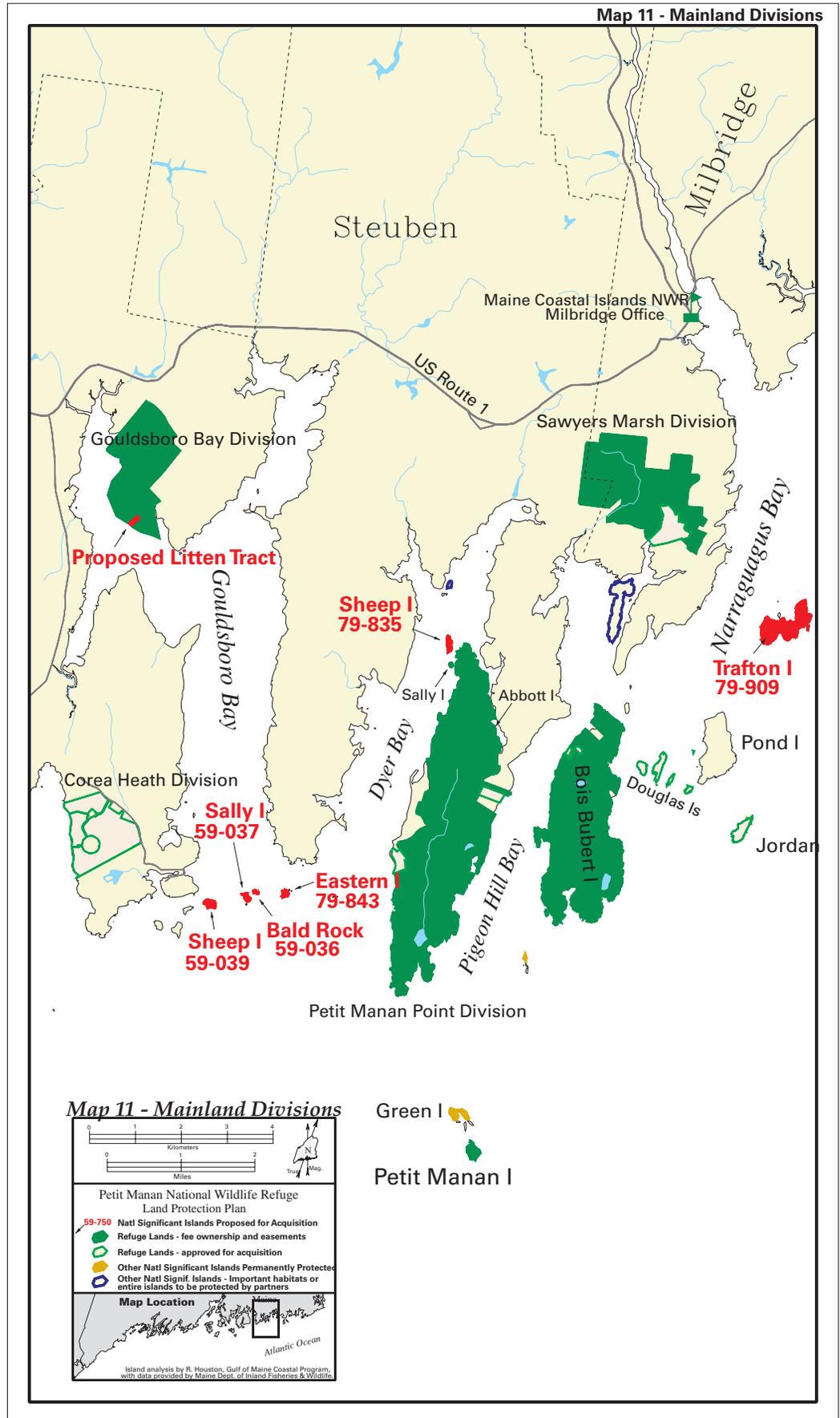
Island analysis by R. Houston, Gulf of Maine Coastal Program, with data provided by Maine Dept. of Inland Fisheries & Wildlife.



Map 7 - Jericho Bay



Map 11 - Mainland Divisions



Attachment B. Details on Proposed Acquisition

The first table in Attachment B corresponds to the maps in Attachment A and identifies each island proposed for acquisition, its Coastal Island Registry (CIREG) number, the town it is in, whether its publicly or privately owned, and our priority and recommended option for acquiring it. The second table identifies each mainland parcel proposed for acquisition, the town its in, whether its publicly or privately owned, and our priority and recommended option for acquiring it.

Expanded definition of each column heading follows:

- Island Name** name of specific island
- CIREG** Coastal Island Registry number as designated by the State of Maine
- Town** the town in which the island is located
- Map** map numbers in Attachment A
- Ownership** whether the parcel is privately or publicly owned. “Private” includes individuals, corporations, and conservation organizations. “CG” refers to the Coast Guard.
- Acres** estimated acres for each island from our Geographic Information System (GIS) database. This estimate may not match exactly town tax records; some parcels lack detailed information. It includes only upland acres.
- Priority 1** includes 52 nationally significant nesting seabird islands lacking long-term protection, two new mainland tracts, all the unacquired seabird island parcels, and Sawyers Marsh and Corea Heath mainland tracts within the currently approved Refuge boundary.
- Priority 2** includes 35 eagle islands lacking long-term protection, and all other unacquired mainland parcels within the currently approved Refuge boundary.
- Acquisition Method** whether we would pursue purchase of complete title or full fee simple (fee); or, a partial interest in conservation easement (easement; see discussion in “Acquisition Method”); or, a “transfer” from the Coast Guard or U.S. Navy. We identify what we believe, given the information now available, is the minimal level of Service interest needed for project objectives that is also cost-effective. However, as islands become available in the future, changes may be warranted to ensure we are using the option that best fits the situation at that time and meets ours and landowner’s needs.

Attachment B: Island Information

Island Name	CIREG	Town	Map	Ownership	Acres	Priority	Acquisition Method
Appledore I	81-191	Kittery	1	Private	99.11	1	Fee
Bald Rock	59-036	Steuben	9	Private	1.31	1	Fee
Bar I	63-802	Tenants Harbor	4	Private	8.14	1	Fee
Bean I	59-190	Sorrento	8	Private	30.09	1	Fee
Bear I	59-925	Deer Isle	6	Private	20.12	2	Easement

Attachment B: Island Information (cont'd)

Island Name	CIREG	Town	Map	Ownership	Acres	Priority	Acquisition Method
Big Nash I	79-626	Addison	9	Private	75.34	1	Fee
Black I	59-132	Bar Harbor	8	Private	13.79	2	Easement
Buckskin I	59-110	Franklin	8	Private	5.60	2	Easement
Cape Wash I	79-297	Cutler	10	Private	21.15	2	Easement
Compass I	59-790	Deer Isle	6	Private	7.00	1	Fee
Conary Nub	59-137	Blue Hill	8	Private	0.17	1	Fee
Crane (S)	63-505	Vinalhaven	5	Private	1.60	2	Fee
Crow I	63-651	Muscle Ridge	5	Private	11.81	1	Fee
Crow I	59-448	Frenchboro	7	Private	10.63	2	Easement
Damariscove I	65-280	Boothbay	4	Private	242.30	1	Easement
Duck Ledge I	79-412	Addison	9	Private	1.06	1	Fee
Eagle I	81-010	Saco	2	Private	3.13	1	Fee
Eastern I	79-843	Steuben	9	Private	4.66	1	Fee
Eastern Mark I	59-956	Stonington	6	Private	9.89	2	Easement
East Sister I	59-447	Swans Island	7	Private	30.27	2	Easement
Fellows I	79-464	Roque Bluffs	9	Private	32.98	2	Easement
Fisherman I	65-274	Boothbay	4	Private	70.72	1	Fee
Fisherman I	79-694	Beals	9	Private	48.15	1	Fee
Flat I	79-621	Addison	9	Private	19.63	1	Fee
Fog I	63-264	Isle Au Haut	7	Private	56.65	2	Easement
Folly I	81-101	Kennebunkport	2	Private	5.36	1	Fee
Freyee I (W)	73-030	Topsham	3	Private	5.29	2	Easement
Fullers Rock	73-308	Phippsburg	3	Private	2.36	1	Fee
Gooseberry I	59-398	Swans Island	7	Private	5.42	1	Fee
Graffam I	63-634	Muscle Ridge	5	Private	65.10	1	Fee
Green Ledge	63-135	Vinalhaven	5	Private	0.73	1	Fee
Haddock I	65-200	Bristol	4	Private	12.05	1	Fee
Harbor I	63-701	Friendship	4	Private	96.68	1	Fee
Harbor I	59-450	Frenchboro	7	Private	19.93	2	Easement
Hog I	65-019	Damariscotta	4	Private	4.69	2	Easement
Hope I	79-393	Roque Bluffs	10	Private	5.52	2	Easement
House I	55-381	Portland	3	Private	31.11	1	Fee
Inner Porcupine I	59-799	Deer Isle	6	Private	10.15	2	Easement
John's I	59-351	Swans Island	7	Private	21.81	2	Easement
Lanes I	55-200	Yarmouth	3	Private	28.19	2	Easement
Large Green I	63-655	Matinicus Isle	5	Private	85.31	1	Fee
Little Green I	63-418	Matinicus Isle	5	Private	2.90	1	Fee
Little Green I	63-654	Matinicus Isle	5	Private	35.97	1	Fee
Little Hurricane I.	63-626	Matinicus Isle	5	Private	1.84	1	Fee
Little Ram I	79-462	Roque Bluffs	9	Private	1.97	2	Easement
Little Sprucehead	59-772	Deer Isle	6	Private	44.08	1	Fee
Little Whaleboat I	55-282	Harpwell	3	Private	17.99	1	Fee
Ltl Whaleboat (SE)	55-283	Harpwell	3	Private	4.31	1	Fee
Mahoney I	59-933	Brooklin	8	Private	6.96	1	Fee
Mouse I	63-330	North Haven	6	Private	2.73	1	Fee

Appendix A – Land Protection Plan

Attachment B: Island Information (cont'd)

Island Name	CIREG	Town	Map	Ownership	Acres	Priority	Acquisition Method
Nash I	79-627	Addison	9	Private	16.70	1	Fee
North Twinnie I	59-160	Bar Harbor	8	Private	3.58	2	Easement
Oak I	63-421	Matinicus Isle	5	Private	1.76	1	Fee
Outer Porcupine I	59-800	Deer Isle	6	Private	6.31	2	Easement
Outer Ram I	79-602	Beals	9	Private	8.63	2	Easement
Pinkham I	79-787	Milbridge	9	Private	79.56	2	Easement
Pond I	59-347	Frenchboro	8	Private	241.00	2	Easement
Ragged I	55-626	Harpwell	3	Private	74.87	1	Fee
Ram I	63-323	Rockport	6	Private	1.06	1	Fee
Ram I	55-521	Cape Elizabeth	2	Private	2.86	1	Fee
Ram I	77-045	Islesboro	6	Private	6.98	2	Easement
Ram I	79-601	Beals	9	Private	29.34	2	Easement
Ram I	63-731	Friendship	4	Private	1.34	2	Easement
Sally I	59-037	Gouldsboro	9	Private	5.26	1	Fee
Sand I	63-730	Friendship	4	Private	4.22	2	Easement
Scraggy I	59-836	Stonington	5	Private	8.49	1	Fee
Seguin I	73-320	Georgetown	3	Private	63.13	1	Easement
Sheep I	79-514	Jonesport	9	Private	4.17	2	Easement
Sheep I	79-835	Steuben	9	Private	7.88	2	Easement
Sheep I	59-039	Gouldsboro	9	Private	9.39	2	Easement
Shingle I	59-959	Stonington	7	Private	9.19	2	Easement
Spectacle I	59-673	Brooksville	6	Private	8.74	1	Fee
Spectacle I	79-132	Eastport	10	Private	4.76	1	Fee
Strout I	79-763	Harrington	9	Private	20.84	2	Easement
The Brothers (C)	63-580	St. George	4	Private	0.57	1	Fee
The Brothers (S)	63-581	St. George	4	Private	7.39	1	Fee
The Brothers (N)	63-579	St. George	4	Private	3.81	1	Fee
The Ladle	79-632	Addison	9	Private	2.28	1	Fee
Thread of Life	65-258	South Bristol	4	Private	1.44	1	Fee
Three Bush I	59-980	Swans Island	7	Private	1.62	1	Fee
Traffon I	79-909	Harrington	9	Private	113.20	1	Fee
Turnip I	55-427	Harpwell	3	Private	1.89	1	Fee
Two Bush I	63-901	Matinicus Isle	5	Private	5.88	1	Fee
Upper Coombs	55-088	Brunswick	3	Private	8.58	2	Easement
Western I	59-675	Deer Isle	6	Private	22.03	2	Easement
Wood I (except CG tract)	81-015	Biddeford	2	Private	35.51	1	Fee
Wooden Ball I	63-917	Matinicus Isle	5	Private	138.20	1	Fee
Total Island Acres					2,306.40		

Attachment B: Mainland Information

Mainland Name	Town	Map	Ownership	Acres	Priority	Acquisition Method
Sprague Neck Property	Cutler	10	U.S. Navy	150.0	1	Transfer
Litten Property	Gouldsboro	9	Private	3.3	1	Fee
Total Mainland Acres				153.3		

**Attachment C. Letter of Support for Acquisition of Bald Eagle Nesting Islands
from the Regional Chief of Threatened and Endangered Species**



United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 Westgate Center Drive
Hadley, MA 01035-9589



In Reply Refer To:
FWS/Region 5/ES-TE

JAN 27 2003

To: Regional Director, Region 5
From: Chief, Division of Threatened and Endangered Species
Subject: Acquisition of Bald Eagle Habitat for the Petit Manan National Wildlife Refuge Complex

I urge your strong support of the Land Protection Plan (LPP) for the Petit Manan National Wildlife Refuge (PMNWR) Complex, part of which recommends acquisition of 37 bald eagle nesting islands along the Maine coast. My reasons for seeking your support appear below.

Bald eagles in Maine continue their dramatic comeback and are leading the recovery of our National symbol in the Northeast. In 2002, 295 pairs of eagles were documented nesting in the State. Nationally, eagle numbers have steadily rebounded for more than 20 years and now surpasses Federal recovery objectives in four of five National recovery zones. As a result of improvements among eagle populations, the U. S. Fish and Wildlife Service (Service) proposed de-listing the species from its threatened status. Final action on this proposal is pending.

The primary objective of the Northern States Bald Eagle Recovery Plan, which includes Maine, is self-sustaining populations in suitable habitats. Consequently, protection and enhancement of eagle populations and their habitat have been and continue to be a major focus of plan implementation.

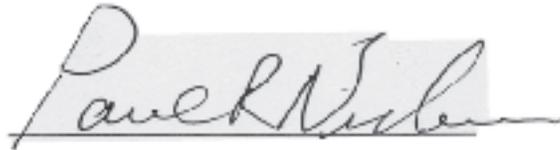
Although Maine will soon achieve its State recovery goals for breeding pairs of bald eagles, delisting at the State level will remove Essential Habitat provisions of the Maine Endangered Species Act. Considerable concern has been expressed that subsequent habitat loss and degradation, especially along the coast and inland lakes, could reverse current population trends. For this reason, Maine Inland Fisheries and Wildlife adopted habitat protection as a State recovery goal. Before eagles can be delisted in Maine, a habitat "safety net" must be established with at least 150 nesting areas in conservation ownership, easement, or cooperative management agreements. Ideally, conserved nesting areas would be distributed throughout the State, include coastal and inland settings, and be well-distributed among different habitats. Currently, about 100 nesting areas are thus protected. An additional 50 nesting areas must be conserved before delisting will occur.

The proposed acquisition of eagle nesting islands in the PMNWR Complex LLP was cooperatively developed by State and Federal biologists in an extremely well coordinated effort. There are about 150 eagle nests on Maine's coastal islands. The 37 islands proposed for acquisition represent the highest conservation priority based on habitat integrity, length of occupation by eagles, long-term conservation integrity of the site for eagles, absence of human disturbance, and strategic geographic importance in conserving eagle populations along the coast. Some territories on the list have been in existence over 30 years. As conserved areas, these islands would be expected to provide eagle nesting habitats for many decades to come.

Island-based eagle territories are some of the easiest to conserve. Protection of nesting islands often conserves 100 percent of the territory (in contrast with inland pairs where complex lake and river shorelines are often in multiple ownerships). Island-nesting eagles use the island year-round (i.e. they are non-migratory). Ample food resources (fish and marine birds) are usually plentiful, and offshore settings provide ice-free feeding habitats all winter. Islands often provide eagles a measure of isolation from human disturbance. Island settings provide fledgling eagles ample obstruction-free space to learn flight and foraging skills. Finally, prey resources adjacent to offshore islands have lower contaminant loads than estuary or inland sites. For these reasons, productivity of island nesting eagles has been greater than for many inland settings.

Implementation of the LPP will make a substantial contribution to the State's "safety net" habitat protection strategy, facilitate recovery of bald eagles in Maine, and provide anchor nesting areas for the foreseeable future. Protection of coastal nesting areas will compliment an initiative by Maine Inland Fisheries and Wildlife to protect inland nesting areas using conservation agreements and easements with new funding from the Landowner Incentive Program.

I strongly support Service acquisition of these coastal nesting islands to insure a permanent recovery of the eagle in the Northeast.

A handwritten signature in cursive script, reading "Paul R. Wilson", is written over a light gray rectangular background.

cc: Sherry Morgan
PMNWR Complex
Nancy McGarigal

Appendix B



Roseate tern
USFWS photo

Species and Habitats of Conservation Concern

- Bird Species
- Rare Botanical Species
- Rare Plant Community Types

Appendix B – Species and Habitats of Conservation Concern

Bird Species

Species	E&T Species ME / USFWS ¹	Migratory Nongame Species of Management Concern ²	>20% of population in north-east ³	International Shorebird Survey Report ⁴	Water-fowl Population Status Report ⁵	Maine Special Concern ⁶	Species of Conservation Concern to North-east ⁷	Partners In Flight ⁸	Important Neo-tropical Migratory Bird species in Maine ⁹	Species of Management Concern on Refuge lands ¹⁰
Common Loon		x								
Pied-billed Grebe							x			
Leach's Storm Petrel •						x				x
Great Cormorant •						x				x
American Bittern •		x					x			
Least Bittern		x				x				
Black Crown Night Heron•						x				x
Canada Goose					x					
American Black Duck •					x			x		x
Northern Pintail					x					
Greater Scaup					x					
Lesser Scaup					x					
Harlequin Duck	x						x			
Surf Scoter					x					
Black Scoter					x					
White wing Scoter					x					
Barrow's Goldeneye					x	x				
Bald Eagle •	x									x
Golden Eagle	x						x			
Northern Harrier •		x					x			
Cooper's Hawk						x				

Bird Species (Cont'd.)

Species	E&T Species ME / USFWS ¹	Migratory Nongame Species of Management Concern ²	>20% of population in north-east ³	International Shorebird Survey Report ⁴	Waterfowl Population Status Report ⁵	Maine Special Concern ⁶	Species of Conservation Concern to North-east ⁷	Partners In Flight ⁸	Important Neo-tropical Migratory Bird species in Maine ⁹	Species of Management Concern on Refuge lands ¹⁰
Northern Goshawk •		x				x				
Red-shouldered Hawk		x								
Peregrine Falcon	x									
Spruce Grouse•								x		
American Coot						x				
Blk Bellied Plover				x						
Piping Plover	x							x		
Killdeer •				x						
Upland Sandpiper	x	x					x			x
Red Knot				x			x			
Sanderling				x						
Semipalmated Sandpiper				x						
Least Sandpiper				x						
Purple Sandpiper				x						
Short-billed Dowitcher				x						
Common Snipe				x						
American Woodcock •				x				x		x
Red-necked Phalarope						x				
Laughing Gull •						x				x
Roseate Tern •	x									x
Common Tern•		x				x	x			x
Arctic Tern •	x									x

Appendix B – Species and Habitats of Conservation Concern

Bird Species (Cont'd.)

Species	E&T Species ME / USFWS ¹	Migratory Nongame Species of Management Concern ²	>20% of population in north-east ³	International Shorebird Survey Report ⁴	Water-fowl Population Status Report ⁵	Maine Special Concern ⁶	Species of Conservation Concern to North-east ⁷	Partners In Flight ⁸	Important Neo-tropical Migratory Bird species in Maine ⁹	Species of Management Concern on Refuge lands ¹⁰
Least Tern	x						x			
Black Tern	x	x					x			
Atlantic Puffin •	x									x
Razorbill •	x									x
Short-eared Owl		x				x	x			
Whip-poor-will•			x				x			
Red-headed Woodpecker		x								
Yellow-bellied Sapsucker									x	
Northern Flicker •		x								
Olive-sided Flycatcher •		x				x		x		
Eastern Wood-Pewee •			x							
Eastern Phoebe •			x							
Yellow-bellied Sapsucker									x	
Loggerhead Shrike						x	x			
Yellow-throated Vireo			x							
Veery		x	x					x	x	
Wood Thrush		x	x					x		
Gray Catbird •			x							
American Pipit	x									
Blue-winged Warbler		x	x							
Northern Parula •			x						x	
Chestnut-sided Warbler •		x						x	x	

Bird Species (Cont'd.)

Species	E&T Species ME / USFWS ¹	Migratory Nongame Species of Management Concern ²	>20% of population in north-east ³	International Shorebird Survey Report ⁴	Waterfowl Population Status Report ⁵	Maine Special Concern ⁶	Species of Conservation Concern to North-east ⁷	Partners In Flight ⁸	Important Neotropical Migratory Bird species in Maine ⁹	Species of Management Concern on Refuge lands ¹⁰
Cape May Warbler •								x		
Blk-throated Blue Warbler			x					x	x	
Blackburnian Warbler •			x					x	x	
Bay-breasted Warbler •								x		
Blk and Wht Warbler •									x	
American Redstart •									x	
Worm eating Warbler		x	x							
Ovenbird •									x	
Canada Warbler •							x	x	x	
Scarlet Tanager			x							
Field Sparrow		x								
Vesper Sparrow						x				
Grasshopper Sparrow	x	x								
Sharp-tailed Sparrow •							x	x		
Rose-breasted Grosbeak									x	
Bobolink •		x								x
Eastern Meadowlark		x				x				x
Rusty Blackbird						x				
Orchard Oriole						x				
Red Crossbill								x		
Herring Gull •										x

Bird Species (Cont'd.)

Species	E&T Species ME / USFWS ¹	Migratory Nongame Species of Management Concern ²	>20% of population in north-east ³	International Shorebird Survey Report ⁴	Waterfowl Population Status Report ⁵	Maine Special Concern ⁶	Species of Conservation Concern to North-east ⁷	Partners In Flight ⁸	Important Neotropical Migratory Bird species in Maine ⁹	Species of Management Concern on Refuge lands ¹⁰
Blk Backed Gull •										x
Great Horned Owl •										x
Double Crested Cormorant •										x
Common Eider •										x
Black Guillemot •										x
Gray Seal										x

• Birds known to nest on the Refuge

References for bird list

1. USFWS Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12, December 31, 1999.
2. MDIFW Revised List of Special Concern Species in Maine, Sept. 25, 1996.
3. Wildlife Species of Regional Conservation Concern in the Northeastern United States, Northeast Wildlife Vol.54, 1999.
4. Changes to Maine's List of Endangered or Threatened Species, July 17, 1996.
5. Importance of Geographic Areas to Neotropical Migrant Birds in the Northeast, USFWS Report by Kenneth Rosenberg and Jeffrey V. Wells. July 1995.
6. Partners in Flight Priority Bird Populations and Habitats, Physiographic Areas 27 and 28(Northern New England and Eastern Spruce-Hardwood Forest).
7. Migratory Nongame Birds of Management Concern in the United States, OMB, USFWS, September, 1995.
8. 1995 International Shorebird Survey Report; (subset of species which have been declining and occur in Region 5)
9. 1996 Waterfowl Population Status Report, USFWS.
10. These are the species from the first 9 columns for which management objectives have been written; or for which we are monitoring their populations in case future management is warranted

Rare Botanical Species

Common Name	Scientific Name	State Rarity Rank	Global Rarity Rank	State Legal Status
Northern yarrow	<i>Achillea millefolium</i> var. <i>borealis</i>	S1	G5T?	Special concern
Nova Scotia false-foxglove	<i>Agalinis neoscotica</i>	S1	G2?	Threatened
Screwstem	<i>Bartonia paniculata</i>	S1	G5	Threatened
Moonwort	<i>Botrychium lunaria</i>	S1	G5	Endangered
Pickering's reed bent-grass	<i>Calamagrostis pickeringii</i>	S1	G4	Threatened
Swarthy sedge	<i>Carex adusta</i>	S1	G5	Endangered
Livid sedge	<i>Carex livida</i>	S2	G5T5	Threatened
Loose-flowered sedge ^A	<i>Carex rariflora</i>	SH	G5	Possibly Extirpated
Salt-marsh sedge	<i>Carex recta</i>	S1	G4	Threatened
Sea-beach sedge	<i>Carex silicea</i>	S3	G5	Special concern
Weigand Sedge	<i>Carex weigandii</i>	S2	G3	Special concern
Coast-blite goosefoot	<i>Chenopodium rubrum</i>	S1	G5	Threatened
Common mare's tail ^A	<i>Hippuris vulgaris</i>	S2	G5	Special concern
Marsh felwort	<i>Lomatogonium rotatum</i>	S2	G5	Threatened
White adder's-mouth	<i>Malaxis monophyllos</i>	S1	G4Q	Endangered
Blinks	<i>Montia fontana</i>	S2	G5	Special concern
Bird's-eye primrose	<i>Primula laurentia</i>	S2	G5	Special concern

^A: Both *Carex rariflora* and *Hippuris vulgaris* have historically been documented on Petit Manan Point, but recent surveys were not able to confirm their presence.

Rare Plant Community Types

Community Type	Maine Natural Areas Program Element Occurrence Rank
Maritime Slope Bog	S2/G3G5
Coastal Plateau Bog	S3
Jack Pine Woodland	S3/G3G5
Northern White Cedar Swamp	S4

References for botanical list:

- Elements of Natural Diversity: Rare, Threatened and Endangered Plants, Maine Natural Areas Program 1999
- An Ecological Assessment of Eastern Brothers and Halifax Island, Washington County Maine, Famous and Spencer-Famous 1999
- South Libby Island Botanical Survey, Bochan and DiGirolamo 1999
- Maine Forest Biodiversity Project Final Report, Maine Natural Areas Program, 1998
- The Vascular Flora of Petit Manan Refuge John's Island, Maine, Mittelhauser and Morrison, 2000

State Ranking: (determined by Maine Natural Areas Program)

- S1: Critically imperiled in Maine because of extreme rarity or vulnerability to extirpation
- S2: Imperiled in Maine because of rarity (6 - 20 occurrences) or because of other factors making it vulnerable to further decline
- S3: Rare in Maine (20 - 100 occurrences)
- S4: Apparently secure in Maine
- SH: Occurred historically in Maine
- Special concern: Rare in Maine based on available information, but not sufficiently rare to be considered threatened or endangered

Global Ranking: (determined by The Nature Conservancy)

- G1: Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres).
- G2: Globally imperiled because of rarity (6 - 20 occurrences) or because of other factors making it vulnerable to further decline (uncertain)
- G3: Globally rare (on the order of 10 - 100 occurrences)
- G4: Apparently secure globally, but with cause for long-term concern.
- G5: Demonstrably widespread, abundant, and secure globally

Appendix C



Whale watching tour
USFWS photo

Compatibility Determinations

- Wildlife observation, nature photography, environmental education, interpretation
- Camping
- Sheep grazing on seabird nesting islands
- Monitoring resources
- Research - Neotropical migrants
- Seabird restoration
- Commercial tour boat service to Machias Seal Island
- Public hunting
- Pre-acquisition — public hunting
- Recreational blueberry picking

Compatibility Determination – Maine Coastal Islands National Wildlife Refuge

Wildlife Observation, Nature Photography, Environmental Education, Interpretation

Establishing and Acquisition Authorities:

Authorized through an Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes. The establishing and acquisition authorities are:

1. 16 U.S.C. 667b, Public Law 80-537, An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other Purposes; and,
2. 16 U.S.C 715-715r, The Migratory Bird Conservation Act, as amended and Established under the authority of the Migratory Bird Conservation Act, as amended.

Refuge Purpose(es):

1. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. 715d (Migratory Bird Conservation Act).
2. "... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. 460k-1 (Refuge Recreation Act).
3. "...particular value in carrying out the national migratory bird management program." 16 U.S.C. 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes).
4. "... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ..." 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986).

National Wildlife Refuge System Mission:

The mission of the National Wildlife 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 in the United States for the benefit of present and future generations of Americans.

Description of Use:

Conduct and allow access for priority public uses (Wildlife Observation, Photography, Environmental Education, Interpretation) as provided for under the NWRS Improvement Act of 1997. These uses will occur on the three mainland divisions (Petit Manan Point, Gouldsboro Bay, and Sawyers Marsh) and all Refuge islands with specific conditions as noted in this determination.

On Petit Manan Point, these priority public uses will normally occur along the Refuge access road and on the Birch Point and Hollingsworth trails. Seven interpretive panels are installed along the latter trail. Parking areas are available at both trail heads. In addition, the entire shoreline of Petit Manan

Point can be accessed for these uses. Access to Gouldsboro Point and Sawyers Marsh Divisions are limited at this time but are expected to improve as trails and parking lots are developed. An abandoned logging road currently provides foot access on the Gouldsboro Bay Division through upland wooded areas to a saltmarsh. Access to the Sawyers marsh Division is via an unimproved logging road. No parking areas are currently available at these two Divisions. Public access to mainland areas is year round, daylight hours only. Public access to Cross, Scotch, Halifax, and Bois Bubert Islands is year round day use only except for Bois Bubert and Halifax, where limited camping currently occurs. Access to all other Refuge islands is seasonal (September 1 through March 31) to accommodate nesting seabirds.

Environmental education activities seek to increase public knowledge and understanding of wildlife and contribute to the conservation of such wildlife. Activities include traditional environmental education activities (teacher-led or staff-led on-site field trips, teacher and student workshops), off-site programs in classrooms, nature study, and interpretation of the wildlife resources and support facilities such as visitor centers, interpretive trails and visitor contact stations. Environmental education activities on the Refuge include teacher workshops, classroom visits, on-site talks, and use of the Refuge as an outdoor classroom/lab for Humboldt Field Research Institute instructors and students. Approximately 15 teacher/student groups use Refuge lands annually. Teachers and student groups use Refuge roadways, two interpretive trails on Petit Manan Point Division, and certain shoreline areas. Students of Humboldt Field Research Institute use these same areas, as well as conduct two to three trips per year to a raised heath bog, woodlands, marsh, and edge areas. The Research Institute operates under a special use permit and has recently been using both Petit Manan Point Division and Bois Bubert Island. Ten to twelve groups visit the Refuge annually with an average of 150 student visits.

On Cross and Halifax islands, Hurricane Island Outward Bound School (HIOBS) operates under an annual refuge special use permit. During July through August, HIOBS may use a maximum of 24 solo, low impact, camping sites, designated annually by the Refuge Manager. A maximum of 864 person-use-days (to include Service project days) as outlined in the 1986 Cross Island Evaluation and Management Plan is authorized on the unimproved trail system.

HIOBS provides the U.S. Fish and Wildlife Service (Service) with an annual volunteer project of not less than two/hours per student; projects are selected by and coordinated through the Refuge Manager.

The Chewonki Foundation (an educational foundation) provides environmental education opportunities on Bois Bubert and Halifax islands under a refuge special use permit. This organization averages one group visit per year with 12-22 overnight visits per year.

Wildlife observation, photography and interpretation activities seek to increase awareness, enjoyment and understanding of the Refuge's wildlife and plant resources. Interpretive signing is located at several locations on Refuge trails. Visitors view displays and observe and photograph wildlife at their own pace. Access to the islands is by private or commercial tour boat.

Availability of Resources:

Existing staff and budget have provided sufficient resources to manage current uses. We anticipate that Refuge public uses will increase as the additional trails open, coastal recreation increases, community outreach increases, and media attention and web-site information on the Refuge expands.

Costs associated with current program implementation include:

Preparation of Special Use Permits	\$500.00
Boat operating costs	\$200.00
Trail Maintenance	\$1,080.00
Materials	\$1,000.00
Staff costs associated with Refuge programs	\$1,200.00
Total Cost of Program	\$3,980.00

*FY 2004 Refuge Budget Allocation included:

Salaries	\$428,609.00
Fixed Costs	\$64,613.00
Annual Maintenance	\$34,100.00
Total Available Funds	\$527,322.00

Anticipated Impacts of the Use:

The Refuge priority uses being evaluated (Wildlife Observation, Photography, Environmental Education, Interpretation) may impose minor negative impacts on specific station physical resources such as trails and roads, and on natural resources such as vegetation and wildlife. Impacts may include erosion, deterioration, trampling, and temporary disturbance. Almost all public uses described herein occur in specific footprints on the Refuge, particularly, Refuge trails on Petit Manan and Gouldsboro Point Divisions. Limited use occurs on the Cross Island trail, and shorelines on Petit Manan Point and around Refuge islands.

The fact that use is generally confined to these areas, overall impacts are not broad nor do they impact the greater part of the Refuge. Currently, most usage occurs during late spring and throughout the summer and fall months. Very little use occurs during the winter. Furthermore, estimated current use (less than 20,000 visitors/year) on Refuge trails does not show intolerable impacts. Erosion does occur in some areas, especially during excessive rainfall events. Boardwalks have been installed in erosion prone areas to lessen these impacts and additional areas are being identified for future boardwalk treatment.

On Cross Island, HIOBS use has caused trail erosion and plant damage in localized areas. These impacts are short-term and can be remediated through re-routing small portions of the trail. Long term impacts are not anticipated as limits are set on allowed use days.

Both short and long term impacts on other Refuge islands is anticipated to be minimal due to the fact that Refuge seabird and eagle nesting islands are closed to access during the summer nesting season which coincides with the highest public use season. Also, coastal islands, by their very nature, are difficult to access. That said, interest in recreational visits to coastal islands is trending upward . Recreational use on islands has increased in recent years (Maine Island Trail Association 2002). The Maine Island Trail System provides opportunities for recreational uses on coastal islands and continues to work cooperatively with private island owners and State and Federal agencies to provide low impact recreational sites for recreational use. MITA has developed Island Use Guidelines, has raised public awareness of the need for ethical use of islands and promotes the *Leave No Trace* philosophy. This type of forward thinking and commitment, should in the long term, help minimize adverse impacts, both short and long term, to islands in the Maine Island Trail System. This ethical philosophy and awareness will, hopefully, extend to Refuge island users.

Public Review and Comment:

This determination is being prepared concurrently with the Comprehensive Conservation Plan (CCP). The listed use has been discussed at CCP public scoping meetings and has been identified in the CCP Planning Update. Further public comment opportunities were afforded when the Draft CCP/EIS was released for 60-day review. No significant changes were made between the draft and final plans.

Determination (Check one below):

- Use is Not Compatible
 Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

The priority public uses (Wildlife Observation, Photography, Environmental Education, Interpretation) are encouraged on Maine Coastal Islands NWR and have been incorporated into the Refuge Management Program. These uses are allowed to continue based on stipulations, mechanisms and regulations that will help to ensure compatibility with Refuge purposes and include:

1. Day use only to decrease the disturbance to wildlife
2. Accommodating/focusing use to specific areas of refuge, such as trails to limit overall disturbance to Refuge habitats and wildlife.
3. Seasonal island closures to protect nesting seabirds and eagles.
4. Special Use Permits with appropriate conditions.
5. Refuge signing and information in brochures.
6. Posting Refuge Regulations.
7. Monitoring by Refuge staff, volunteers, and partners.
8. Promoting the *Leave No Trace* philosophy

Justification:

Specific areas (trails) of the Refuge have been designated for these uses on Petit Manan Point and Cross Island . These areas are monitored periodically for impacts that would degrade the natural environment and excessive visitation that would lessen the quality experiences that we strive to make available in support of the mandates of the National Wildlife Refuge System Improvement Act of 1997. Clearly, wildlife oriented uses on Refuges contribute significantly to public education and support of national wildlife refuges.

The Refuge uses partnerships and environmental education to motivate citizens of all ages to action and understanding in protecting a healthy ecosystem. Partnerships and environmental education are tools used to build a land ethic, develop political support, lessen vandalism, littering and poaching. Visitors come to the Refuge to see, enjoy, and learn about wildlife and their habitats. Wildlife observation, photography, and educational opportunities along Refuge shorelines are wildlife oriented activities (USFWS 1985) which are compatible with Refuge purposes. The minor impacts to vegetation and wildlife which may occur are a worthwhile trade off for informing visitors about island wildlife and

providing an opportunity for active land stewardship. These activities are used throughout the country to inform and educate visitors to public lands of all types (Grater 1976).

With the stipulations noted in Special Use Permit conditions, access trails, and posted regulations, activities will be compatible with Refuge purposes, while providing opportunities for visitors to use and learn about Refuge and marine resources. The priority public uses in this determination, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of this Refuge.

Signature: Refuge Manager: Charles W. Blair 3-23-2005
(Signature and Date)

Concurrence: Regional Chief: Anthony D. Legg, March 28, 2005
(Signature and Date)

Mandatory 15-Year Re-Evaluation Date: 3-1-2020

Literature

- Grater, Russell K. 1976. *The Interpreters Handbook*. Globe, AZ: Southwest Parks and Monuments Association.
- Maine Island Trail Association 2002. *Maine Island Trail Association - 2002 Stewardship Handbook and Guidebook*, 15th ed. 376 pp.
- U.S. Fish and Wildlife Service. 1985. *Refuge Manual*. Washington, D.C.: U.S. Government Printing Office.
- U.S. Fish and Wildlife Service. 1997. *National Wildlife Refuge System Improvement Act of 1997*, Public Law 105-57-Oct. 9, 1997.

Compatibility Determination – Maine Coastal Islands National Wildlife Refuge

Camping

Establishing and Acquisition Authorities:

Authorized through an Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes. The establishing and acquisition authorities are:

1. 16 U.S.C. 667b, Public Law 80-537, An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other Purposes; and,
2. 16 U.S.C 715-715r, The Migratory Bird Conservation Act, as amended and Established under the authority of the Migratory Bird Conservation Act, as amended.

Refuge Purpose(s):

1. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. 715d (Migratory Bird Conservation Act).
2. "... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. 460k-1 (Refuge Recreation Act).
3. "...particular value in carrying out the national migratory bird management program." 16 U.S.C. 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes).
4. "... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ..." 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986).

National Wildlife Refuge System Mission:

The mission of the National Wildlife 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 in the United States for the benefit of present and future generations of Americans.

Description of Use:

The use analyzed is overnight camping on two Refuge Islands (Bois Bubert and Halifax). This use officially started in 1990 under a Cooperative Agreement with the Maine Island Trail Association (MITA). Specific sites on each island are designated for this use. On Bois Bubert Island, the designated campsite is located about half way down the side of the island on the SE side of Seal Cove. The area is on a raised gravel beach bordered by typical spruce forest habitat. Bubert is a 1200 acre island. The designated camp site on Halifax Island is on a gravel over wash bar on the NW side of the island. The area comprises about one acre of this 75 acre island. Fragile areas of the island containing unique botanical features are closed to entry. Neither island attracts nesting seabirds. A bald eagle nest on Bois Bubert is not in the vicinity of the campsite and no disturbance by this use would occur.

Typically, most use occurs in July and August. The use is controlled and monitored via a Special Use Permit MITA and individual SUP’s for non-MITA members. Users are required to make reservations in advance. Uses are monitored through the Refuge Office.

Camping on off shore islands is a popular and traditional recreation activity in coastal Maine. With an increasing interest in kyaking and an abundance of islands stringing Maine's coastline, kyaking is a natural for access to coastal islands that facilitates both day use and over night camping. The Maine Island Trail Association (MITA) manages the Maine Island Trail, a 325 mile waterway extending from Casco Bay east to Machias Bay. In 2001 there were 104 islands on the Trail open to day use and overnight camping. Both Bois Bubert and Halifax Islands provide critical links in the trail for kyakers navigating along islands in this downeast section of the trail.

MITA (Maine Island Trail Association) is allowed to use one unimproved site on Bois Bubert Island for overnight camping and an area on the western portion of Halifax Island. Low impact camping is encouraged, no fires or pets are permitted and groups must call the Refuge prior to staying on the islands. The maximum number of people allowed per day is not to exceed 10. MITA on an average accounts for about 10 group visits per year which equals about 30 overnight visits per year.

CHEWONKI (an educational foundation) is allowed to use one unimproved site on Bois Bubert Island for overnight camping and one site on the western portion of Halifax Island in conjunction with their environmental education programs. Low impact camping is utilized. Overnight stays do not exceed two nights unless foul weather/sea conditions prevent safe sailing. The maximum number of people allowed per day is not to exceed 10. CHEWONKI at the maximum averages one group visit per year with 12-22 overnight visits/year.

General Public is allowed to use both Bois Bubert and Halifax islands for camping under a special use permit. Use/visitation is dictated by weather and sea conditions. Most use occurs during July and August. In 2001, 5 groups (about 30 campers) used Halifax and Bois Bubert islands.

Availability of Resources:

Current staffing and budget is sufficient to monitor use periodically during the summer camping season. MITA assigns island stewards to assist island owners with annual monitoring and clean up. Without this assistance, it would be difficult to adequately manage this use. There are no direct Refuge costs for special equipment or maintenance. Both camp sites are primitive and have no facilities or structures. Annual periodic cleanup and monitoring is accomplished totally by MITA volunteers.

Costs associated with Administration of the program include:

Preparation of special use permits	\$ 500.00
Annual check of Refuge signs	\$185.00
Boat Operating Costs \$50/hr @ 3 hrs	\$200.00
Managing reservations	\$250.00
Total Cost of Program.....	\$1,135.00

FY 2004 Refuge Budget Allocation included:

Salaries.....	\$428,609.00
Fixed Costs	\$ 64,613.00
Annual Maintenance	\$34,100.00
Total Available Funds	\$527,322.00

Based on a review of the budget allocated for recreational use management, I certify that funding is adequate to ensure compatibility and to administer and manage the recreational use listed.

Anticipated Impacts of the Use:

Impacts associated with this use would generally be confined to a relatively small area of each island in the immediate vicinity of the use; i.e., the campsite. As each camp site is situated on a gravel type beach, there would be little direct impacts to the immediate environment. Camping may impose some impacts along the edges of the shoreline which may include trampling of vegetation and temporary disturbance to wildlife. These impacts would be short term and would not impose long term degradation at the current use. Seasonal storms, waves, and high tides actually impact island shorelines with forces that far exceed limited human foot traffic. Long term impacts in the form of vegetation trampling, local wildlife disturbance, and littering would occur if this use increased greatly or were unrestricted. On some coastal islands that have a much higher use, littering, erosion, and vegetation trampling were found to be excessive. Islands that have established trails can and do develop areas where erosion is excessive and results in loss of ground cover and sloughing away of the actual trail. These impacts have not occurred on these two islands.

The listed use would not detract from other Refuge programs because volunteers provide all monitoring and policing through MITA's Island Steward Program. Also, Refuge goals and objectives focus mainly on coastal seabird nesting islands. Neither island where this use occurs has nesting seabirds. One pair of eagles nest on Bois Bubert at this time (not in the vicinity of Seal Cove) and no osprey nest in close proximity to the camp site. No eagles or osprey nest on Halifax Island. On Halifax Island- the eastern side of the Island is closed to protect fragile botanical features. Endangered or threatened species do not occur in the immediate area of the campsites and no wetlands would be impacted.

Again, there seem to be very minor problems associated with littering, in fact both of these groups are required to clean up the area and notify the Refuge of any problems. MITA does an annual litter pick-up at the campsite and along the shoreline; most trash collected is fishing gear that has washed on shore.

Public Review and Comment:

This determination is being prepared concurrently with the Comprehensive Conservation Plan (CCP). The listed use has been discussed at CCP public scoping meetings and has been identified in the CCP Planning Update. Further public comment opportunities were afforded when the Draft CCP/EIS was released for a 60-day review. No significant changes occurred between the draft and final plans.

Determination (Check one below):

- Use is Not Compatible
 Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

MITA

1. MITA members will not enter closed areas (see current MITA Handbook for reference map) for any purpose at any time without written authorization from the Refuge Manager. Closed areas are subject to change as wildlife activity dictates. Permittee will be informed of these changes both verbally and by posted signs in the field.
2. This permit is issued upon the express condition that the United States of America, its agents and employees shall be free from all liabilities and claims for damages and/or suits for or by reason of any injury to any person or property of any kind whatsoever, whether to the property of the United States, the Permittee or third parties, from any cause whatsoever arising from any acts or omissions of the Permittee, its agents or employees pursuant to the terms of this Permit or in any way connected thereto, and the Permittee hereby covenants and agrees to indemnify, defend, save and hold harmless the United States of America, its agents, and employees from all such liabilities, expenses, obligations, damages, and costs on account of or by reason of any injuries, deaths, liabilities, claims, suits or losses however occurring or damages arising out of the same.
3. The Permittee shall purchase and maintain during the term of this permit comprehensive general liability insurance against claims occasioned by actions or omissions of the Permittee, its agents, and employees, in carrying out the activities and operations authorized hereunder. Such insurance shall be commensurate with the degree of risk and the scope and size of such activities authorized herein, but in any event not less than \$500,000 for bodily injury per person, and \$1,000,000 per incident, and property damage of at least \$25,000 per occurrence. A certificate of insurance will be secured from the insurance carrier and provided to the Refuge prior to beginning any activities authorized under this permit. All liability policies are to name the United States of America as an additional insured and shall specify that the insurance company shall have no right of subrogation against the United States and shall have no recourse against the Government for payment of any premium or assessment.
4. Group size maximum is 10 persons per MITA site.
5. Permittee will provide the Refuge Manager with an annual report of the number of overnight groups (including the number of individuals per group) known to have used the islands per month, as well as the number of hours MITA volunteers spent maintaining each site. This report is due no later than October 12, of each year.
6. Each site on the refuge shall be monitored throughout the season by a MITA-designated volunteer. A log of problems encountered and/or time spent checking and maintaining the site will be submitted along with statistics from item #5.
7. All human waste and trash generated during the visit must be carried off-refuge with the group or individual at departure.
8. Permittee will use only designated camp areas. No vegetation at the sites will be disturbed or cut without authorization from the Refuge Manager.
9. Fires (cooking or camp) and pets are not permitted on Refuge islands.

The CHEWONKI Foundation

1. Tour leader and/or group will not enter closed areas for any purpose at any time without written authorization from the Refuge Manager. Closed areas are subject to change as wildlife activity dictates. Permittee will be informed of these changes both verbally and by posted signs in the field.
2. This permit is issued upon the express condition that the United States of America, its agents and employees shall be free from all liabilities and claims for damages and/or suits for or by reason of any injury to any person or property of any kind whatsoever, whether to the property of the United States, the Permittee or third parties, from any cause whatsoever arising from any acts or omissions of the Permittee, its agents or employees pursuant to the terms of this Permit or in any way connected thereto, and the Permittee hereby covenants and agrees to indemnify, defend, save and hold harmless the United States of America, its agents, and employees from all such liabilities, expenses, obligations, damages, and costs on account of or by reason of any injuries, deaths, liabilities, claims, suits or losses however occurring or damages arising out of the same.
3. The Permittee shall purchase and maintain during the term of this permit comprehensive general liability insurance against claims occasioned by actions or omissions of the Permittee, its agents, and employees, in carrying out the activities and operations authorized hereunder. Such insurance shall be commensurate with the degree of risk and the scope and size of such activities authorized herein, but in any event not less than \$500,000 for bodily injury per person, and \$1,000,000 per incident, and property damage of at least \$25,000 per occurrence. A certificate of insurance will be secured from the insurance carrier and provided to the Refuge prior to beginning any activities authorized under this permit. All liability policies are to name the United States of America as an additional insured and shall specify that the insurance company shall have no right of subrogation against the United States and shall have no recourse against the Government for payment of any premium or assessment.
4. Groups will not exceed 10, including tour leaders.
5. In accordance with the 1992 United States General Accounting Office audit, the U.S. Fish and Wildlife Service is required to conduct compliance checks to ensure Permittees are operating within all aspects of their permit and U.S. Coast Guard regulations. These checks may be conducted unannounced.
6. A schedule of island visits planned for the season will be provided to the Refuge Manager prior to beginning and activities authorized under this permit so that overlap with other tour groups may be avoided.
7. Permittee will provide the Refuge Manager with an annual report of the number of overnight tours (including the number of individuals per tour) conducted on the refuge per month. This report is due no later than October 12, 2001.
8. Fires (cooking or camp) and pets are not permitted on Refuge islands.
9. All human waste and trash generated during the visit must be carried off-refuge with the group or individual at departure.
10. Permittee will use only designated camp areas, designated on a map by Refuge Manager. No vegetation at the sites will be disturbed or cut without authorization from the Refuge Manager.

General Public

1. On Bois Bubert Island-only camp in the area located at Seal Cove and on Halifax Island-only camp on the area which is near the north-facing cobble beach. No more than 2 consecutive nights is allowed for camping,
2. On Halifax Island- the eastern side of the Island is closed to protect fragile botanical features.
3. Fires of any kind are not allowed.
4. Group size limited to 10 persons
5. Permittee will notify the Refuge of any problems on or around the island.
6. All human waste and trash generated during the visit must be carried off island.
7. Pets are not allowed on Refuge islands.
8. All visitors must practice the *Leave No Trace* principles.

Justification:

Although not necessary to enjoy wildlife-oriented refuge activities, overnight stays could expand on this by providing recreational opportunities to offshore islands where an overnight stay would facilitate the increased safety in having a safe haven in the coastal ocean environment. Cooperating with MITA also allows for the dissemination of literature and information promoting island ethics. In addition, MITA members serve as our monitoring eyes on islands that we only visit periodically.

MITA is a non-profit conservation organization committed to preserving Maine's undeveloped islands in their natural state while providing a recreational asset for responsible visitors. These goals are achieved by encouraging a sense of stewardship and promoting a philosophy of low-impact use. Members use the islands in a manner that has little or no impact on the natural environment with special consideration given to wildlife. Members also assist island owners in monitoring wildlife, recreational use, keeping shores clean, and carrying out projects. Sea kayaking has become an incredibly popular sport and pressures on islands are increasing. MITA is the only organization that is educating these users to responsible stewardship. Their annual publication includes information on marine/island wildlife, safety, property rights, commercial traffic, low impact camping, weather, etc. In addition, each year prior to their annual mailing the USFWS is given an opportunity to send additional information (e.g., Island Ethics brochure).

They perform a needed service - cleaning up litter, primarily from commercial fishing activities, noting wildlife use in daily logs, and activities that may be of potential concern, and serve as stewards of the site, which is very attractive and consequently draws use. MITA use is allowed under an annual refuge special use permit.

The CHEWONKI Foundation is a non-profit educational institution dedicated to outdoor experiential education. Founded in 1915 programs encourage participants to develop their personal potential, gain a sense of community, and heighten their interest in and understanding of the natural world, in particular the marine environment. CHEWONKI has provided long-term monitoring of wildlife populations on many islands within the Gulf of Maine. CHEWONKI use of the islands has been minimal, one or two visits per year. Instructors are well versed in seamanship, respect for the land and wildlife, and natural history, and they leave the site spotless.

The Refuge uses partnerships and environmental education to motivate citizens of all ages to action and understanding in protecting a healthy ecosystem. Partnerships and environmental education are tools used to build a land ethic, develop political support, lessen vandalism, littering and poaching. Visitors come to the Refuge to see, enjoy, and learn about wildlife and their habitats. Wildlife observation, photography, and educational opportunities along Refuge shorelines are wildlife oriented activities (USFWS 1985) which are compatible with Refuge purposes. The minor impacts to vegetation and wildlife which may occur are a worthwhile trade off for informing visitors about island wildlife and providing an opportunity for active land stewardship. These activities are used throughout the country to inform and educate visitors to public lands of all types (Grater 1976).

With the stipulations noted in the Special Use Permit conditions, activities will be compatible with Refuge purposes, while providing opportunities for visitors to use and learn about Refuge and marine resources.

General Public use on these islands for camping is justified because to exclude one segment of users and allow the same use to others would not be in keeping with an equal opportunity philosophy. Not to allow the general public the same opportunity as MITA or Chewonki might be construed as discriminatory.

Based on the limited detrimental impacts of this use, the above stipulations, and a 12 year history of use, overnight camping at current levels will not materially interfere with or distract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

Signature: Refuge Manager: _____

[Handwritten Signature] 3-23-2005
(Signature and Date)

Concurrence: Regional Chief: _____

[Handwritten Signature] March 28, 2005
(Signature and Date)

Mandatory 10-Year Re-Evaluation Date: _____

3-1-2015

Literature Cited

Grater, Russell K. 1976. The Interpreters Handbook. Globe, AZ: Southwest Parks and Monuments Association.

U.S. Fish and Wildlife Service. 1985. Refuge Manual. Washington, D.C. : U.S. Government Printing Office.

Compatibility Determination – Maine Coastal Islands National Wildlife Refuge

Sheep Grazing on Seabird Nesting Islands

Establishing and Acquisition Authorities:

Authorized through an Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes. The establishing and acquisition authorities are:

1. 16 U.S.C. 667b, Public Law 80-537, An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other Purposes; and,
2. 16 U.S.C 715-715r, The Migratory Bird Conservation Act, as amended and Established under the authority of the Migratory Bird Conservation Act, as amended.

Refuge Purpose(s):

1. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. 715d (Migratory Bird Conservation Act).
2. "... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. 460k-1 (Refuge Recreation Act).
3. "...particular value in carrying out the national migratory bird management program." 16 U.S.C. 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes).
4. "... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ..." 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986).

National Wildlife Refuge System Mission:

The mission of the National Wildlife 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 in the United States for the benefit of present and future generations of Americans.

Description of Use:

What is the Use? Is the use a priority use?

The use is sheep grazing on Nash Island and Metinic Island. Sheep grazing is not a priority public use of the National Wildlife Refuge System.

Where would the use be conducted?

Sheep are currently allowed to graze freely on both Nash and Metinic islands.

The Service does not own Metinic Island entirely in fee title and sheep move onto Refuge land from the south end of the island which is under private ownership. Sheep move to Nash Island at low tide from

Big Nash, a privately owned island. Permanent fencing to limit or exclude sheep on either island would be difficult, costly, and inefficient as the animals could easily travel around the fences during low tides.

When would the use be conducted?

Sheep remain on both islands year around and are gathered each year in early summer for shearing. Approximately 120 sheep graze Metinic Island Refuge property and 30-35 graze on Nash Island. Due to the sheep movement between private and public land, this number does not represent a daily use.

How would the use be conducted?

Sheep are currently allowed to graze freely on both Nash Island and Metinic islands. On Metinic Island, sheep are fenced out of the tern colony with electric fence during April through August.

Why is the use being proposed?

Both Nash and Metinic Islands are predominately vegetated by grass and forbs. The islands host nesting terns, eiders, and gulls. Metinic Island supports one of the Refuge’s six seabird restoration projects. Controlled grazing may be the best tool available at this time to maintain island nesting habitat for terns and the other nesting island species. Other habitat management options including burning, mowing, or herbicide treatment are not practical or not cost effective.

The Service is engaged in a study to determine the impacts of sheep grazing and the effectiveness of grazing as a management tool for maintaining viable island nesting bird habitat. The results of the study will be evaluated within 5 years of this approved compatibility determination. This compatibility determination will be reevaluated at that time and the new determination will reflect the findings of the study.

Availability of Resources:

The costs incurred by Refuge programs for managing this use are funded through the on-going seabird restoration project which is funded under RONS projects. Funding supports seasonal research interns and sheep enclosure electrical fencing, solar panels and batteries on Metinic Island. No funding is directed to Nash Island as this island does not support a seabird restoration program at this time. MMS dollars are also available if necessary. Currently, the cost of maintaining sheep free areas to protect nesting seabirds is available in existing program budgets.

Costs associated with administration of this program include:

Boat Operating Costs \$50/hr @ 15hrs	\$750.00
Equipment maintenance/replacement (includes, fence posts, electric fence, hardware, solar panel, batteries)	\$2,500.00
Staff time to set up and monitor	\$1,050.00
Intern Time (monitoring)	\$210.00
Total Cost of Program	\$4,300.00

This is the cost to implement the program and is not an annual cost. The cost will fluctuate depending upon how often equipment needs replacing.

FY 2004 Refuge Budget Allocation included:

Salaries	\$428,609.00
Fixed Costs	\$64,613.00
Annual Maintenance	\$34,100.00
RONs Project (Metinic Island)	\$10,800.00
Total Available Funds	\$538,122.00

Based on a review of the budget allocated for grazing management, I certify that funding is adequate to ensure compatibility and to administer and manage this use.

Anticipated Impacts of the Use:

Where uncontrolled, grazing can have detrimental impacts to habitat and wildlife. For example, high density cattle stocking and grazing that is not seasonally managed has been shown to have a negative impact on nesting densities of several species of ducks and upland sandpipers in the northern Great Plains (Kruse and Bowen 1996, Bowen and Kruse 1993).

Grazing can negatively impact other species, such as terns and eiders directly through physical disturbance which could subject the birds to predation by gulls or more indirectly through habitat alteration from intensive grazing. In addition, grazing under some conditions could displace nesting birds, eiders in particular, to peripheral and less productive habitat. The positive effects of grazing as a management tool must also be considered. Managing habitat with cattle grazing can be successful where grazing pressure is managed and a rest rotation regime is used (Mundinger 1976). Sheep grazing has also been used to manipulate rangeland vegetation in Utah (Jensen and Urness 1982) and to control cattail in California (Ermacoff 1968).

Nash Island is a former tern nesting island that now supports nesting eiders and gulls in addition to a small number of terns nesting on the periphery of the island. Little information is available on the interactions between sheep and seabirds on this island. It is currently unclear what effects nesting black-backed gulls are having on terns and eiders, or if the combination of grazing and gull predation is synergistic.

Metinic Island currently supports a seabird restoration program where research interns monitor nesting terns and sheep. Sheep on this island are excluded from the tern restoration site during the may-August nesting season using electric fencing. Also, vegetation is being studied to look at the effects grazing has on habitat. Grazing is being monitored to ascertain how it can be applied as a tool to manage vegetation for improving nesting habitat for terns on offshore seabird nesting islands. Where vegetation is left unchecked for long periods of time, encroaching rank grasses, forbs, and shrubs can choke out quality tern nesting habitat. It appears that grazing during the fall and winter does control vegetation and with seasonal exclosures, can become an effective tool in tern habitat management. It can also be argued that for eiders, grazing would reduce the vegetative density and thereby reduce good eider nesting habitat.

Managing grazing through timing and exclusion will have a positive impact on nesting terns over the long term via vegetation control and nesting habitat maintenance. Using grazing as a tool will help meet Refuge objectives to restore tern populations on Refuge lands.

Public Review and Comment:

This determination is being prepared concurrently with the Comprehensive Conservation Plan (CCP). The listed use has been discussed at CCP public scoping meetings and has been identified in the CCP

Planning Update. Several comments have been received to date. Further public comment opportunities were afforded when the Draft CCP/EIS was released for a 60-day review. Appendix I in the final EIS summarizes the comments and our responses to them. No significant changes occurred between draft and final plans, except for the decision to re-evaluate the use within 5 years of this approval.

Determination Check one below):

- Use is Not Compatible
- Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Where grazing can be controlled, stocking density will be below the maximum necessary to achieve objectives. Where appropriate, sheep will be seasonally excluded from specific habitats or nesting colonies through physical barriers. Because the Service does not have complete ownership of Nash and Metinic islands, it is difficult to control grazing on the Refuge portion of each island. Seasonal fencing (exclosures) may be the most effective technique at this point, as permanent fencing across each island would not be feasible or effective given that sheep are extremely mobile and can negotiate around fences during low tides. On Metinic Island, the tern colony will be enclosed by electric fencing. This technique works well as long as the area can be consistently monitored throughout the nesting season. Two interns are hired annually to monitor nesting seabirds on this island. In addition, the island protocol includes specific tasks to monitor sheep and study vegetation in the enclosure and adjacent grazed areas. The impacts of grazing and the effectiveness of using grazing as a management tool will be evaluated within 5 years of the approved compatibility determination.

Justification:

Grazing can be used in the form of a system which can be locally adapted to produce desirable objectives. Rest and or deferred rotational periods can be incorporated into a system to produce a variety of habitat for wildlife. With proper timing, kind of livestock, stocking rate and frequency, grazing can be used to achieve wildlife objectives (Refuge Manual, 6RM 5.5B 1982). Using grazing as a habitat management tool on Refuge islands is currently under study. With the use of exclosures to keep sheep out of the seabird colony, Refuge objectives to restore colonial nesting seabirds to off shore islands are being accomplished. The limited amount of grazing currently on Refuge islands will not deter from nor detract from the mission of the National Wildlife Refuge System. Under current circumstances, accommodating grazing, at least at current levels, will help the Refuge gain biological information for the seabird restoration program.

Signature: Refuge Manager: Charles W. Stein 3-23-2005
(Signature and Date)

Concurrence: Regional Chief: Anthony D. Legere March 28, 2005
(Signature and Date)

Mandatory 5-Year Re-Evaluation Date: 3-1-2010

Literature Cited:

- Bowen B.S. and A.D. Kruse. 1993. Effects of grazing on nesting by upland sandpipers in south-central North Dakota. *J. Wildl. Manage.* 57: 291-301.
- Ermacoff, N. 1968. Marsh and habitat management practices at the Mendota Wildlife Area. California Dept. of Fish and Game. Game Management leaflet 12. 12 pp.
- Mundinger, J.G. 1976. Waterfowl response to rest-rotation grazing. *J. Wildl. Manage.* 40: 60-68.
- Jensen, C.H. and P.J. Urness. 1982. Big game livestock relationships survey: Grazing domestic sheep to manipulate vegetation for big game on foothill rangeland. Utah Div. Of Wildlife Resources, Proj. No. Utah W-105-R. 39 pp.
- Kruse, A.D. and B.S. Bowen. 1996. Effects of grazing and burning on densities and habitats of breeding ducks in North Dakota. *J. Wildl. Manage.* 60(2): 233-246.
- Wasson, R.L. 1984. Pulling together a Maine-New England maritime market development program. Maine Agricultural Experiment Station Misc. Pub. 684: pp. 106-111.

Compatibility Determination – Maine Coastal Islands National Wildlife Refuge

Monitoring Resources

Establishing and Acquisition Authorities:

Authorized through an Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes. The establishing and acquisition authorities are:

1. 16 U.S.C. 667b, Public Law 80-537, An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other Purposes; and,
2. 16 U.S.C 715-715r, The Migratory Bird Conservation Act, as amended and Established under the authority of the Migratory Bird Conservation Act, as amended.

Refuge Purpose(s):

1. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. 715d (Migratory Bird Conservation Act).
2. "... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. 460k-1 (Refuge Recreation Act).
3. "...particular value in carrying out the national migratory bird management program." 16 U.S.C. 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes).
4. "... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ..." 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986).

National Wildlife Refuge System Mission:

The mission of the National Wildlife 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 in the United States for the benefit of present and future generations of Americans.

Description of Use:

Activities: On Refuge lands, monitoring through collection of zoological specimens, including herpetiles, lepidopterans, Odonates, Arachnids and other Family groups occurs as opportunities with resource professionals arises. On Refuge lands, we monitor for occurrence of Lyme disease carrying ticks, and band or census birds in support of MAPS project, Migratory Bird Management Office needs, Regional migratory bird inventory needs, and special projects where banding and censusing are appropriate techniques for gathering biological information. We collect soil samples as needed to support Refuge research and monitoring projects and NRCS soil survey needs and collect vegetative samples for pre-approved herbarium use.

A Refuge Special Use Permit is completed annually between the Service and Humboldt Field Research Institute.

Humboldt Field Research Institute is a educational institution specializes in training wildlife, biological, botany, etc. professionals in coastal ecology. They have completed surveys of bryophytes, wetland plants, geological patterns, etc. on Petit Manan Point and some islands. Professionals from all over the nation attend classes, in addition to gaining more baseline data on Refuge resources. Communications with other professionals is also a benefit. Data, where appropriate, is entered into a GIS.

Availability of Resources:

Resources are available through current RONS funding. Refuge staff, volunteers and cooperators also provide resources to implement projects.

Anticipated Impacts of the Use:

Impacts have been positive and useful, increasing information for the Refuge and coastal ecosystem. This activity supports the purposes for which the Refuge was established. Some trampling of vegetation may occur, but monitoring is being conducted by trained professionals, who wish to continue their studies and respect the resource. Some wildlife may temporarily be disturbed.

Public Review and Comment:

This determination is being prepared concurrently with the Comprehensive Conservation Plan (CCP). The listed use has been discussed at CCP public scoping meetings and has been identified in the CCP Planning Update. Further public comment opportunities were afforded when the Draft CCP/EIS was released for a 60-day review. No significant changes were made between draft and final plans.

Determination (Check one below):

- Use is Not Compatible
- Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Research activities will be implemented through a special use permit and monitored through annual review of standard operating procedures, impacts on the resource, pre-season consultations, and an annual end of season field report. New proposals must be submitted for review and approval prior to initiation of work. Prior to field trips, any areas of use will be agreed to and identified on a map.

Justification:

Data collection, monitoring of existing wildlife species, monitoring dispersal of insects, continuing plant inventories, etc. add to the Refuge baseline data information which enables land managers and wildlife professionals to better manage Federal lands. These activities support the purposes of the Refuge. Monitoring Resources will not detract from the mission of the National Wildlife Refuge System or the objectives of the Refuge.

Signature: Refuge Manager:

Clint W. Blaw 3-23-2005
(Signature and Date)

Concurrence: Regional Chief:

Anthony D. Legz March 28, 2005
(Signature and Date)

Mandatory 10-Year Re-Evaluation Date:

3-1-2015

Compatibility Determination – Maine Coastal Islands National Wildlife Refuge

Research – Neotropical Migrants

Establishing and Acquisition Authorities:

Authorized through an Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes. The establishing and acquisition authorities are:

1. 16 U.S.C. 667b, Public Law 80-537, An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other Purposes; and,
2. 16 U.S.C 715-715r, The Migratory Bird Conservation Act, as amended and Established under the authority of the Migratory Bird Conservation Act, as amended.

Refuge Purpose(s):

1. “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” 16 U.S.C. 715d (Migratory Bird Conservation Act).
2. “... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ...” 16 U.S.C. 460k-1 (Refuge Recreation Act).
3. “...particular value in carrying out the national migratory bird management program.” 16 U.S.C. 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes).
4. “... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ...” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986).

National Wildlife Refuge System Mission:

The mission of the National Wildlife 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 in the United States for the benefit of present and future generations of Americans.

Description of Use:

This effort is part of a *Neotropical Migrant Landbird Monitoring Program for Maine and New Brunswick: Assessing Coastal Importance and Management Strategies*. This project, initiated in 1993, is a long-term international, multi-agency/privately funded monitoring program for Neotropical migrant landbirds nesting and migrating through structurally stable boreal forests, bogs, and fens that are relatively free from future habitat fragmentation, large changes in habitat structure, human disturbances, and insect infestations. The USFWS provides Challenge Grant and Migratory Bird-Nongame Funds for monitoring on selected Refuge islands.

Monitoring of Neotropical migrants occurs on selected Refuge islands in the spring, summer, and fall. On Cross Island, the primitive trail system is used and overnight stays are permitted in the Refuge cabin. Boat support is often provided by USFWS. Vegetative monitoring is done in August through September. Neotropical migrant and vegetation studies conducted via contract researchers and Refuge staff initiated by a RONS FY98 project, as appropriate will be expanded to include future Refuge lands (islands and mainland) and those lands that will be managed cooperatively through conservation easements or management agreements.

Availability of Resources:

Current staff and funding through RONS projects or flexible funds are available to support these kinds of projects. Periodic support through specific Regional accounts, e.g., Partners-In-Flight, also may be available.

Anticipated Impacts of the Use:

Impacts to vegetation and wildlife are expected to be minimal. Most studies will be conducted on Refuge habitats that include mixed forests, grasslands, shrublands and both forested and non-forested islands. Research activities will be similar on all Refuge lands. Only experienced technicians will be employed, using, where possible, those that have had previous field experience in the area.

Positive impacts include:

Developing and implementing an international, long-term monitoring program for Neotropical migrant landbirds in Maine and New Brunswick;

Monitoring species, mostly Neotropical migrants, under-sampled by the BBS within the Region (19 species) and state (13 species) or species with a low level of sampling and showing significant population declines (2 species);

Evaluating long-term monitoring trends for the migration season for Neotropical migrant landbirds using point counts;

Compliment and enhance the results and interpretation of BBS data for the spruce-fir forest biome,

Monitor nesting populations of merlin (only area in New England with established breeding population), Bicknell's thrush, and blackpoll warbler (only lowland populations in the U.S. and Canadian Maritimes); and

Establish baseline floral and faunal information on Refuge lands.

Public Review and Comment:

This determination is being prepared concurrently with the Comprehensive Conservation Plan (CCP). The listed use has been discussed at CCP public scoping meetings and has been identified in the CCP Planning Update. Several comments have been received to date. Further public comment opportunities were afforded when the Draft CCP/EIS was released for a 60-day review. No significant changes were made between draft and final plans.

Determination (Check one below):

- Use is Not Compatible
- Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Nesting bald eagles, osprey and seabirds will be taken into consideration to minimize disturbance to these birds. Project proposals, cooperative agreements, Special Use Permits, and standard operating procedures will be reviewed prior to each field season; survey routes and plot points will be approved by Refuge staff who will occasionally accompany consultants on field trips; and end of season reports will be compiled. Regulations to ensure the safety for all participants will be reviewed prior to each season.

Justification:

Cooperative agreements and contracts are entered into under the authority of the Migratory Bird Conservation Act, as amended (16 USC 715b). Agreements and contracts facilitate cooperation and support management and monitoring on Refuge lands.

This cooperative effort between private land trusts, USFWS, USNPS, US Navy, Maine Department of Inland Fisheries and Wildlife and private landowners, and a Provincial Park has brought together a diverse assemblage of land managers to address the plight of Neotropical migrant landbirds whose habitat requirements have no political/ownership boundaries. Management decisions affecting land use require accurate, reliable long-term data on bird populations and vegetation changes which these studies evaluate. Existing BBS population trend data collected under less rigorous protocol, without concurrent vegetation and land use analysis, need to be critically evaluated. This study will provide the means to accomplish these tasks.

Neotropical Migrant Research will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of this Refuge.

Signature: Refuge Manager: Clayton W. Blain 3-23-2005
(Signature and Date)

Concurrence: Regional Chief: Anthony D. Lopez March 28, 2005
(Signature and Date)

Mandatory 10-Year Re-Evaluation Date: 3-1-2015

Compatibility Determination – Maine Coastal Islands National Wildlife Refuge

Seabird Restoration Activities by Non-Service Personnel

Establishing and Acquisition Authorities:

Authorized through an Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes. The establishing and acquisition authorities are:

1. 16 U.S.C. 667b, Public Law 80-537, An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other Purposes; and,
2. 16 U.S.C 715-715r, The Migratory Bird Conservation Act, as amended and Established under the authority of the Migratory Bird Conservation Act, as amended.

Refuge Purpose(es):

1. “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” 16 U.S.C. 715d (Migratory Bird Conservation Act).
2. “... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ...” 16 U.S.C. 460k-1 (Refuge Recreation Act).
3. “...particular value in carrying out the national migratory bird management program.” 16 U.S.C. 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes).
4. “... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ...” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986).

National Wildlife Refuge System Mission:

The mission of the National Wildlife 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 in the United States for the benefit of present and future generations of Americans.

Description of Use:

Restoration, research, monitoring, and management of seabird colonies on certain islands of the Refuge have been on-going since about 1984. Currently (2002), this activity occurs on Petit Manan, Seal, Matinicus Rock, Pond, Ship, and Metinic Islands. As more islands are acquired or are placed under cooperative management status (easements/management agreements, etc.), seabird restoration opportunities may increase. Decisions on future sites will be determined through the Gulf of Maine Seabird Working Group. This compatibility determination specifically covers seabird restoration activities conducted by non-Service personnel. Refuge management activities conducted by the Service do not require a compatibility determination.

Refuge activities that support seabird restoration include feeding studies, banding, predator control, monitoring, nest searching, productivity studies, food studies, vegetation and nest site mapping for GIS analysis, and census. Vegetation management through use of pesticides, burning, mowing or grazing may also occur. Restoration work normally begins in mid-May and continues through the first week in August. Species that will be studied under this determination include common tern, Arctic tern, roseate tern, Atlantic puffin, black guillemot, laughing gull, herring gull, great black-back gull, razorbill, Leach's storm-petrel, and common eider.

Nine objectives and 88 strategies have been developed to carry out seabird restoration in the Comprehensive Conservation Plan.

Availability of Resources:

Funding for seabird work on Refuge islands is mainly through RONS projects and NWRS challenge cost-share grants. Staff salaries and Station operations funds are adequate to support this project.

Cost breakout for seabird restoration

Intern salaries (Petit Manan, Ship, Metinic Islands)	\$26,000.00
Food for interns	\$ 7,800.00
Equipment/materials	\$ 5,500.00
Logistical (boat) Support (120 hrs @ \$50/hr.).....	\$ 6,250.00
Logistical (staff) Support	\$10,000.00
Planning	\$ 3,025.00
Total	\$58,575.00

Audubon Support (Seal, Pond, Matinicus Rock Islands)

(Funded through Challenge Grant)	\$20,000.00
Project Total	\$78,575.00

FY 2004 Refuge Budget Allocation included:

Salaries	\$428,609.00
Fixed Costs	\$ 64,613.00
Annual Maintenance	\$34,100.00
Total Available Funds	\$527,322.00

Based on a review of the budget allocated for Refuge biological programs, I certify that funding is adequate to ensure compatibility and to administer and manage seabird restoration.

Anticipated Impacts of the Use:

Seabird restoration at Maine Coastal Islands NWR has been on-going since the mid-1980's and is in support of the purposes for which the Refuge was established. In addition, protecting and restoring nesting seabird populations on the Refuge's coastal islands contributes to regional and international seabird conservation goals and supports the *Gulf of Maine Tern Management Plan* (Gulf of Maine Tern Working Group 1989), the *Roseate Tern Recovery Plan* (USFWS 1998) and the focus of the Gulf of Maine Seabird Working Group (GOMSWG). Seabird restoration is also listed as Refuge Goal 5 in the Comprehensive Conservation Plan. It is expected that positive impacts will continue to accrue to colonies of common and Arctic terns and Federally endangered roseate terns which are showing promise of expanding. Within the time period 1984 and 2001, the Maine population of common terns increased 168% (2,543 to 6,806 pairs); Arctic terns increased 61% (1,720 to 2,771 pairs); and roseate tern populations increased 278% (76 to 289 pairs). Members of GOMSWG have identified the need to maintain numerous seabird colonies along the Maine coast. Increasing the geographic distribution and the number of managed colonies would minimize the potential for a single catastrophic event (i.e., oil spill or disease) from devastating a significant percentage of the population (Welch 2001).

Seabird restoration funding is adequate at present levels provided that funding continues through RONS project funding and challenge cost-share grants. Long term, funding shortfalls could come about if the seabird program expands and RONS funding remains stable, and/or challenge grant funding ceases. In such a case, it is anticipated that this priority program could divert funding from other Refuge programs.

Public Review and Comment:

This determination is being prepared concurrently with the Comprehensive Conservation Plan (CCP). The listed use has been discussed at CCP public scoping meetings and has been identified in the CCP Planning Update. Further public comment opportunities were afforded when the Draft CCP/EIS was released for a 60-day review. No significant changes were made between draft and final plans.

Determination (Check one below):

- Use is Not Compatible
- Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Restoration and research activities need be monitored through annual review of standard operating procedures, research proposals, annual work plans, pre-season and post-season consultations with cooperators and/ or contract researchers, field inspections, and annual end of season field reports. Reviewing each season's results will allow staff biologists to evaluate the program to ensure that it is meeting the Refuge's goals and objectives. New proposals will be submitted for review and approval prior to initiation of work and cooperative agreements and will be reviewed on an annual basis. All non-Service publications will acknowledge the Service and identify any resources and assistance provided.

Justification:

Nesting seabirds (terns, puffins, eiders) had been extirpated from most of Maine's islands by the turn of the 20th century. Only through the cooperative effort of Federal, State, and private partnerships, have we been able to reverse this trend and start to see recoveries in populations of nesting seabirds along the Maine coast.

Migratory birds are a trust resource that the Fish and Wildlife Service is mandated to protect. To support the Service in managing and protecting this resource, the Refuge has made this a priority biological program and every effort is made to assure that staffing and funding continues to support this program. Restoration projects and research data collection activities require a long-term commitment and investment of time, funds, and expertise. To continue funding this program will help insure that Refuge goals and objectives are met. In reviewing the Station annual budget and staffing required to support this program, I have determined that carrying out a seabird restoration program on Maine Coastal Islands NWR will not interfere with nor detract from other Refuge programs or the fulfillment of the National Wildlife Refuge System mission or the purposes of the Refuge.

Signature: Refuge Manager: Clayton A. Blaw 3-23-2005
(Signature and Date)

Concurrence: Regional Chief: Anthony D. Lejeune March 28, 2005
(Signature and Date)

Mandatory 10-Year Re-Evaluation Date: 3-1-2015

Literature

Gulf of Maine Tern Working Group 1989. Gulf of Maine tern management plan. 44 pp.

U.S. Fish and Wildlife Service. 1998. Roseate Tern - Northeast population recovery plan. 75 pp.

Welch, I. (compiler) 2001. Seabird restoration in the Gulf of Maine -2001 season. Refuge files, Petit Manan NWR.

Compatibility Determination – Maine Coastal Islands National Wildlife Refuge

Commercial Tour Boat Service to Machias Seal Island

Establishing and Acquisition Authorities:

Authorized through an Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes. The establishing and acquisition authorities are:

1. 16 U.S.C. 667b, Public Law 80-537, An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other Purposes; and,
2. 16 U.S.C 715-715r, The Migratory Bird Conservation Act, as amended and Established under the authority of the Migratory Bird Conservation Act, as amended.

Refuge Purpose(s):

1. “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” 16 U.S.C. 715d (Migratory Bird Conservation Act).
2. “... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ...” 16 U.S.C. 460k-1 (Refuge Recreation Act).
3. “...particular value in carrying out the national migratory bird management program.” 16 U.S.C. 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes).
4. “... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ...” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986).

National Wildlife Refuge System Mission:

The mission of the National Wildlife 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 in the United States for the benefit of present and future generations of Americans.

Description of Use:

1. *What is the use? (Is the use a priority use?)*

This use includes ferry service to Machias Seal Island for the purpose of observing wildlife, including the largest Alcid colony on the coast of Maine. This recreational use also includes guided access on and over the island to observation blinds and interpretation of the nesting seabird colony. Wildlife observation is a priority use of the National Wildlife Refuge System.

2. *Where would the use be conducted?*

Seabird tours occur on Machias Seal Island, approximately 9 miles off the coast of Cutler, Maine. The island is owned by the State of Maine, Dept. of Inland Fisheries and Wildlife and is managed by Maine Coastal Islands NWR under a Memorandum of Understanding.

3. *When would the use be conducted?*

The period of use normally runs from late May to mid-August of each year depending on weather conditions and numbers of birds on the island.

4. *How would the use be conducted?*

Tour boats servicing the island originate in Jonesport and Cutler, Maine, and Grand Manan, New Brunswick, Canada. The two United States tour boat operators operate under a refuge special use permit. The Canadian operator operates under a Canadian permit. A Schedule allotting landings to each captain is developed cooperatively by the U.S. Fish and Wildlife Service and the Canadian Wildlife Service (CWS). Landings under the special use permit covers the period from June 1 to July 31 which is the time when most birds are present on the island. Landings are limited to 30 people per day (total) which is shared among the three tour boat captains. The average stay on the island is under 3 hours, normally 2 to 2-1/2 hours.

5. *Why is the use being proposed?*

This use is on going and is supported because seabird viewing opportunities where people can actually land on an island and view birds up close from observation blinds are very limited. The current operation on Machias Seal Island provides the only opportunity of this kind in coastal Maine. This is also a good opportunity to provide both outreach and education and to promote support of nesting seabirds and island habitats.

Background

Sovereignty Issue: The Refuge Manager at Maine Coastal Islands NWR has, for the past several years, coordinated tour boat activities with the U.S. State Department's Office of Ocean Affairs, Interior Department Solicitors, CWS, and the Regional Office in Hadley, Massachusetts. Sovereignty is still an issue, even though the U.S. State Department says the island belongs to the United States. Canada also claims the island and has a physical presence there via a staffed Canadian lightstation.

The CWS has designated this island as a migratory bird sanctuary, and has limited the access by tourists during the breeding season since 1986. American and Canadian tour boat captains take tourists to the island to view seabirds. Until the 2001 season (June-July), captains were issued permits by the CWS based on a landing schedule coordinated with the U.S. Fish and Wildlife Service (FWS), Region 5 Regional Office. In 2001, permits were issued by the U.S. (Petit Manan National Wildlife Refuge [NWR]). U.S. captains were requested not to sign Canadian landing permits. The Canadian captain still operates under a Canadian permit. The State Department supports that the island is a U.S. possession and belongs to the State of Maine. The State of Maine delegated ownership to their Department of Inland Fisheries and Wildlife (IFW). A Memorandum of Understanding between the FWS and IFW outlines FWS's responsibility for management on the island. CWS has cooperated with the Maine Coastal Islands NWR in protecting seabirds and providing biological and public use information. This island is listed as 1 of 43 islands protected by Maine Coastal Islands NWR.

Availability of Resources:

Existing staff and budget have provided sufficient resources to manage the current use.

Costs associated with current program implementation include:

Preparation of Special Use Permits	\$ 500.00
Boat operating costs	\$ 500.00
Meetings	\$1,000.00*
Materials/Maintenance	\$ 500.00
Staff costs associated with Refuge program	\$2,900.00
* Includes periodic meetings at U.S. State Department	
Total Cost of Program	\$5,400.00

FY 2004 Refuge Budget Allocation included:

Salaries	\$428,609.00
Fixed Costs	\$64,613.00
Annual Maintenance	\$34,100.00
Total Available Funds	\$527,322.00

Anticipated Impacts of the Use:

Approaching and landing on Machias Seal Island by commercial tour boats and passengers causes short term disturbance to seabirds that are nesting near the approach or loafing nearby. In many cases, birds become accustomed to people and boat movements and disturbance may actually decrease over the season. Canadian light keepers who live on the island year round and seasonal researchers from the University of New Brunswick (UNB) interact with the birds on an almost daily basis during the nesting season. Landings by tour boats which are limited to 30 people per day during the June and July permit period does not seem to be an additive disturbance during this time period. Long term impacts are not known, however, this use has been on-going for many years and still, this colony is thriving and is one of the most productive seabird colonies on the Maine coast.

Currently, commercial tour boats servicing this island are limited to three operators. Current use (est.3,200 landings/year) appears not to be detrimental to nesting seabirds. Because of the issues surrounding sovereignty and the increasing interest in ecotourism opportunities of this kind, and pressures to increase these opportunities, additional tour boat operators may surface in the future. In coastal Maine, wildlife viewing is becoming a popular pursuit for an increasing number of the vacationing public and their desire to view wildlife has resulted in commercial enterprises focusing on bringing people to wildlife. Approximately 25,000 people annually take a commercial seabird tour boat excursion from Bar Harbor past Petit Manan Island. Between 1983-1985 at least 19 companies in coastal Maine chartered cruises to view wildlife resulting in an economic gain of approximately \$1,000,000 per year (Colgan, 1996). It is thus possible, and probable, that increased landings on this island may occur causing more disturbance than the birds could tolerate. In that event, long term detrimental impacts would be evident. Furthermore, current political issues surrounding this island may make it difficult for FWS and CWS to control landing numbers in the future.

Public Review and Comment:

This determination is being prepared concurrently with the Comprehensive Conservation Plan (CCP). The listed use has been discussed at CCP public scoping meetings and has been identified in the CCP Planning Update. Several comments have been received to date. Further public comment opportunities were afforded when the Draft CCP/EIS was released for a 60-day review. No significant changes were made between draft and final plans.

Determination (Check one below):

- Use is Not Compatible
 Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Refuge staff meet annually with CWS and tour boat captains to discuss issues and concerns surrounding ecotourism landings on the island. Landings are limited to 30 per day (15/captain) and normally last less than three hours. CWS hires a tern warden to monitor landings and with UNB assesses the level of disturbance from landings and accessing the observation blinds. Tours are monitored by the CWS tern warden and each boat captain and each tour group is escorted to a central staging area before being directed to the blinds. This keeps people from wandering and unnecessarily disturbing nesting birds. Tour boat captains operate under a special use permit that stipulates a landing schedule and a maximum number of landings per day.

Justification:

Tour boat landings on Machias Seal Island provide a unique opportunity to bring people to a tremendous wildlife viewing opportunity. This opportunity supports the refuge priority uses of wildlife observation and photography as outlined in the National Wildlife Refuge System Improvement Act of 1997 and will increase outreach of the Refuge and National Wildlife Refuge System. Commercial tour boat service to Machias Seal Island contributes to the achievement of the national wildlife refuge purposes and the National Wildlife Refuge System, and will not interfere with nor detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the Refuge.

Signature: Refuge Manager: Clayton W. Blaw 3-23-2005
(Signature and Date)

Concurrence: Regional Chief: Anthony D. Lege March 28, 2005
(Signature and Date)

Mandatory 10-Year Re-Evaluation Date: 3-1-2015

Literature Cited

Colgan, C.S. 2002. Economic analysis Report, Petit Manan National Wildlife Refuge Planning Project, Draft Environmental Impact Statement. U.S. Fish and Wildlife Service, Hadley, Massachusetts.

Compatibility Determination – Maine Coastal Islands National Wildlife Refuge

Public Hunting

Establishing/Acquisition Authority:

Authorized through an Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes. The establishing and acquisition authorities are:

1. 16 U.S.C. 667b, Public Law 80-537, An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other Purposes; and,
2. 16 U.S.C 715-715r, The Migratory Bird Conservation Act, as amended and Established under the authority of the Migratory Bird Conservation Act, as amended.

Refuge Purpose:

1. "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. 715d (Migratory Bird Conservation Act).
2. "... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ..." 16 U.S.C. 460k-1 (Refuge Recreation Act).
3. "...particular value in carrying out the national migratory bird management program." 16 U.S.C. 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes).
4. "... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ..." 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986).

National Wildlife Refuge System Mission:

The mission of the National Wildlife 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 in the United States for the benefit of present and future generations of Americans.

Description of Use:

1. *What is the use?*
This determination covers opening several sections of the Refuge to the hunting of migratory game birds and waterfowl, small and big game.
2. *Where would the use be conducted?*
Areas of the Refuge that are open to hunting and are identified in the Refuge Hunt Plan (USDI-Petit Manan NWR 2001a) and Refuge Specific Regulations (USDI-Petit Manan NWR 2001b) include; Sawyers Marsh Division and Bois Bubert Island in Milbridge, Gouldsboro Bay Division in Gouldsboro, and 22 islands which are open to hunting of migratory birds. In addition, the Refuge proposes to allow deer hunting on a portion of the 2,200 acre Petit Manan Point Division

located in Steuben, Maine. The new hunt would occur north of the access road in the Birch Point trail area.

3. *When would the use be conducted?*

Hunting takes place in Maine normally from September through January.

4. *How would the use be conducted?*

All hunting will be conducted under State and Federal regulations and Refuge Specific Regulations. Refuge Specific Regulations are available to the public in brochure format.

The Refuge ownership on coastal lands in Maine extends to the mean low tidal mark, thus, they normally encompass intertidal lands that lie between the high and low tidal ranges. These intertidal lands are considered Public Trust Lands of the people of Maine, and as such, certain rights (fishing, fowling, and navigation) are held in common by the people of Maine. The Legislature of Maine states that these rights held in public trust are generally derived from English Common Law and from the Massachusetts Colonial Ordinance of 1641-1647 (State of Maine Bureau of Public Lands). These recreational uses held in trust are among the most important to the people of Maine. The Service recognizes these rights and, unless there is evidence that such uses detract from the Service's mission to protect these lands, will allow such uses. Hunting occurs outside the seabird nesting season (April 1 to August 31) and eagle nesting season (February 15 to August 31).

5. *Why is this use being proposed?*

Hunting is one of the priority uses outlined by Congress in the Refuge Improvement Act of 1997. The Service supports and encourages priority uses on National Wildlife Refuge lands where appropriate and compatible. Hunting is used in some instances to manage wildlife populations and can provide pertinent biological information to State wildlife agencies. Hunting is also a traditional form of wildlife oriented recreation that can be accommodated on many NWRS lands. In coastal Maine, many private lands and State areas offer similar hunting opportunities.

Availability of Resources:

Additional fiscal resources to conduct this activity would be minimal as hunting would occur under State regulations and not as a Refuge regulated hunting program. Staff time and resources necessary to monitor this use are provided below. Staff from the Rockport and Milbridge offices will provide limited monitoring. The Refuge would also coordinate with State wardens of the Department of Inland Fisheries and Wildlife and Department of Marine Resources Marine Patrol personnel.

Costs associated with administration of this use include:

Preparation of Annual Hunt Plan (16 staff hrs @ \$29.98/hr)	\$480.00
Preparation of Refuge Hunting Information/maps (16 staff hrs @ \$22.43/hr)....	\$413.00
Law Enforcement (40 staff hrs @ \$28.61/hr)	\$1,144.40
Boat Operation (\$50/hr @ 10 hrs)	\$500.00
News Releases (8 staff hrs @ \$24.60/hr).....	\$240.00
*Hunter Orientation Session	\$320.00
Program Cost	\$3,097.00

*FY 2004 Refuge Budget Allocation included:

Salaries	\$428,609.00
Fixed Costs	\$64,613.00
Annual Maintenance	\$34,100.00
Total Available Funds	\$527,322.00

Based on a review of the budget allocated for recreational use management, I certify that funding is adequate to ensure compatibility and to administer and manage the recreational use listed.

Anticipated Impacts of Use:

Hunting is consistent with the purposes of the Refuge when carried out within established regulations and is a priority uses identified in the Refuge Improvement Act. Island visitation is expected to be minimal and anticipated uses and impacts should also be minimal provided that access is limited to outside the seabird nesting season. The Refuge does not anticipate significant hunting pressure to occur on Refuge lands as a result of opening these areas (islands and mainland units) to hunting due to the availability of private lands open to hunting outside the Refuge (USDI-Petit Manan NWR 2001).

Adverse effects on wildlife (waterfowl) populations are not expected to occur because of the hunting regulations and bag limits that have been set in place by the Federal (USFWS-Migratory Bird Office) and State (Dept. Of Inland Fisheries and Wildlife) agencies that manage the harvest of waterfowl populations. Significant conservation measures and extensive pre and post season population monitoring and the institution of Adaptive Harvest Management are safeguards inherent in waterfowl management. Adverse effects on other game species are not expected to occur because hunting will occur under State regulations. The State Dept. Of Inland Fisheries and Wildlife sets harvest limits that takes into account game species population data collected by State biologists and wildlife species assessments.

Public Review and Comment:

A draft EA for public hunting on Petit Manan NWR was prepared and distributed to meet NEPA compliance in 2001. A news release was published in the Downeast Coastal Press and Ellsworth American providing information on availability of the EA. Copies were made available at the Refuge office and at other locations in all towns affected by the proposed action. Copies were also sent to State agencies and to Refuge neighbors. The EA document was available for a 30 day comment period.

This determination was prepared concurrently with the Comprehensive Conservation Plan (CCP). The listed use has been discussed at CCP public scoping meetings and identified in CCP Planning Updates. Further public comment opportunities were afforded when the Draft CCP/EIS was released for a 60-day review. Appendix I of the EIS summarizes the public comments and our responses to them. We modified our hunt proposal for Petit Manan Point in response to the comments we received. Instead of opening the Point to all deer seasons, we have limited it as described above.

Determination (Check one below):

- Use is Not Compatible
 Use is Compatible With the Following Stipulations

Stipulations Necessary to Ensure Compatibility:

Access for hunting will occur during the State hunting season (October-January) which is outside the window of the seabird and eagle nesting season. State hunting regulations, including bag limits will be in place. In addition, Refuge specific regulations will be in place to minimize conflicts with other public uses allowed on the Refuge. Federal regulations under 50CFR will also be in place. This activity will occur on Refuge mainland units and off-shore islands that have been historically hunted for many years with no adverse effects to wildlife populations or the landscape. Islands that are normally hunted are rock ledges or the intertidal rocky ledge portion of islands. Access to hunt within the intertidal area has already been established through Colonial Ordinance of 1641-1647 as clarified by Title 12 M.R.S.A. 571 et. seq. Hunting will occur under conditions outlined above unless safety or overriding resource concerns would make hunting incompatible.

Justification:

Hunting is a wildlife dependent priority public use with minimal impact on refuge resources. Hunting would be conducted under State and Refuge regulations, thereby reducing the amount of staff time and effort needed to oversee this activity. Staff time and resources that would be needed will be identified during annual work planning to minimize impacts on other refuge programs. In addition, hunting is consistent with the purposes for which the Refuge was established; the Service policy on hunting; the National Wildlife Refuge System Improvement Act of 1997; and the broad management objectives of the National Wildlife Refuge System. Hunting is compatible with and will not detract from the mission of the National Wildlife Refuge System or the objectives of the Refuge. Furthermore, hunting on public lands in Maine is a popular and traditional recreation activity that is strongly supported by the State Department of Inland Fisheries and Wildlife. This agency strongly supports hunting on National Wildlife Refuges in Maine.

Signature: Refuge Manager

Charles W. Blank 3-23-2005
 (Signature/Date)

Concurrence: Regional Chief:

Anthony D. Leary March 28, 2005
 (Signature/Date)

Mandatory 15-Year Re-Evaluation Date:

3-1-2020

Literature Cited

- State of Maine Bureau of Public Lands (no date). State Statutes, Title 12 (revised). Bureau of Public Lands, Augusta.
- USDI-Petit Manan NWR 2001). Final Environmental Assessment for Public Hunting on Petit Manan National Wildlife Refuge. Refuge files. 14 pp.
- USDI-Petit Manan NWR 2001). Hunt Management Plan - Petit Manan National Wildlife Refuge. Refuge files. 11 pp.

Pre-acquisition Compatibility Determination – Proposed Additions to Maine Coastal Islands National Wildlife Refuge

Public Hunting - Pre-acquisition

Establishing/Acquisition Authority:

Authorized through an Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes. The establishing and acquisition authorities are:

1. 16 U.S.C. 667b, Public Law 80-537, An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other Purposes; and,
2. 16 U.S.C. 715-715r, The Migratory Bird Conservation Act, as amended and Established under the authority of the Migratory Bird Conservation Act, as amended.

Refuge Purposes:

1. “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” 16 U.S.C. 715d (Migratory Bird Conservation Act).
2. “... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ...” 16 U.S.C. 460k-1 (Refuge Recreation Act).
3. “...particular value in carrying out the national migratory bird management program.” 16 U.S.C. 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes).
4. “... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ...” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986).

National Wildlife Refuge System Mission:

The mission of the National Wildlife 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 in the United States for the benefit of present and future generations of Americans.

Description of Use:

Hunting is a popular traditional sport in Maine that occurs on many off-shore islands and ledges. Island hunting focuses on seabirds, such as eiders, scoters, and old squaw. Geese, brant, and other waterfowl such as black ducks are also taken on coastal islands. Hunting on lands acquired by the Refuge would occur during the State waterfowl hunting season and would be conducted under State regulations. In Maine, sea duck hunting takes place from October 1 through January 19. Hunting takes place in the intertidal areas around islands and on ledges associated with many islands and normally

does not occur on the island proper. This type of hunting entails concealment in rocky areas, sometimes using driftwood for blind construction. Decoy sets are placed just off shore. Many hunters use State registered guides for transportation and equipment use. This use is being proposed to accommodate hunting on islands that may be acquired under the Comprehensive Conservation Plan (CCP). During the life of the plan (15 years) 87 islands spanning the coast of Maine may be acquired from willing sellers. The names and locations of prospective acquisitions are identified in the CCP's Land Protection Plan. Many of these islands have been historically hunted and are currently hunted. Also, hunting is one of the priority uses outlined by Congress in the Refuge Improvement Act of 1997.

Most islands that are being considered for acquisition under the proposed action of the CCP are small to medium sized, ranging from only a few to 250 acres in size. Some islands, however, may be larger, exceeding 400 acres in size. Island habitats range from bare rocky outcrops to grassy with mixed shrubs. Most islands exhibit shallow soils overlying granitic bedrock. Forested islands are usually dominated by red spruce and balsam fir. Others may have mixed hardwood associates such as yellow birch, white birch, red maple, and striped maple. All islands identified for acquisition/protection are in the Refuge database (updated annually) and listed as Nationally Significant Nesting Islands.

Service acquisitions of coastal lands in Maine extend to the mean low tidal mark, thus, they normally encompass intertidal lands that lie between the high and low tidal ranges. These intertidal lands are considered Public Trust Lands of the people of Maine, and as such, certain rights (fishing, fowling, and navigation) are held in common by the people of Maine. The Legislature of Maine states that these rights held in public trust are generally derived from English Common Law and from the Colonial Ordinance of 1641-1647 as clarified by Title 12 M.R.S.A. 571 et. seq. (State of Maine Bureau of Public Lands). These recreational uses held in trust are among the most important to the people of Maine today . The Service recognizes these rights and, unless there is evidence that such uses detract from the Service's mission to protect these lands, will allow such uses. Thus, hunting would generally be allowed under Service acquisition on lands in the Land Protection Plan but would occur outside the seabird nesting season (April 1 to August 31) and eagle nesting season (February 15 to August 31).

Availability of Resources:

Staff time and resources necessary to monitor this use are provided below. Staff from the Rockport and Milbridge offices will provide limited monitoring. The Refuge would also coordinate with State wardens of the Department of Inland Fisheries and Wildlife and Department of Marine Resources Marine Patrol personnel.

Costs associated with administration of this use include:

Preparation of Annual Hunt Plan (16 staff hrs @ \$29.98/hr)	\$480.00
Preparation of Refuge Hunting Information/maps (16 staff hrs @ \$22.43/hr)...	\$413.00
Law Enforcement (40 staff hrs @ \$28.61/hr)	\$1,144.40
Boat Operation (\$50/hr @ 10 hrs)	\$500.00
News Releases (8 staff hrs @ \$24.60/hr)	\$240.00
Hunter Orientation Session	\$320.00
Program Cost	\$3,097.00

FY 2004 Refuge Budget Allocation included:

Salaries	\$428,609.00
Fixed Costs	\$64,613.00
Annual Maintenance	\$34,100.00
Total Available Funds	\$527,322.00

Based on a review of the budget allocated for recreational use management, I certify that funding is adequate to ensure compatibility and to administer and manage the recreational use listed.

Anticipated Impacts of Use:

Hunting is consistent with the purposes of the Refuge when carried out within established regulations and is a priority uses identified in the Refuge Improvement Act. Island visitation is expected to be minimal and anticipated uses and impacts should also be minimal provided that access is limited to outside the seabird nesting season. The Refuge does not anticipate significant hunting pressure to occur on Refuge lands as a result of opening these areas to hunting due to the availability of private lands open to hunting outside the Refuge (USDI-Petit Manan NWR 2001).

Adverse effects on wildlife (waterfowl) populations are not expected to occur because of the hunting regulations and bag limits that have been set in place by the Federal (USFWS-Migratory Bird Office) and State (Dept. Of Inland Fisheries and Wildlife) agencies that manage the harvest of waterfowl populations. Significant conservation measures and extensive pre and post season population monitoring and the institution of Adaptive Harvest Management are safeguards inherent in waterfowl management.

Public Review and Comment:

This determination was prepared concurrently with the Comprehensive Conservation Plan (CCP). Four open houses were held as part of the CCP planning process. Information was presented on past and future refuge acquisitions and priority public uses and the status of management planning, including the approved 2001 Refuge EA and Hunt Plan. Further public comment opportunities were afforded when the Draft CCP/EIS was released for a 60-day review. No significant changes occurred in this proposal between the draft and final plans.

Determination (Check one below):

- Use is Not Compatible
- Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility

Access for hunting will occur during the State hunting season (October-January) which is outside the window of the seabird nesting season. State hunting regulations, including bag limits will be in place. This activity will occur on off-shore islands that have been historically hunted for many years with no adverse effects to wildlife populations or the landscape. Islands that are normally hunted are rock ledges or the intertidal rocky ledge portion of islands. Access to hunt within the intertidal area has already been established through Colonial Ordinance. Hunting will occur under conditions outlined above unless safety or overriding resource concerns make hunting incompatible.

Justification:

Hunting is a wildlife dependent priority public use with minimal impact on refuge resources. Hunting would be conducted under State regulations, thereby reducing the amount of staff time and effort needed to oversee this activity. Staff time and resources that would be needed will be identified during annual work planning to minimize impacts on other refuge programs. In addition, hunting is consistent with the purposes for which the Refuge was established; the Service policy on hunting; the National Wildlife Refuge System Improvement Act of 1997; and the broad management objectives of the National Wildlife Refuge System. Hunting is compatible with and will not detract from the mission of the National Wildlife Refuge System or the objectives of the Refuge. Furthermore, hunting on public lands in Maine is a popular and traditional recreation activity that is strongly supported by the State Department of Inland Fisheries and Wildlife. This agency strongly supports hunting on National Wildlife Refuges in Maine.

Signature: Refuge Manager:

Clayton A. Blaw 3-23-2005
(Signature/Date)

Concurrence: Regional Chief:

Anthony D. Page March 28, 2005
(Signature/Date)

Mandatory 15-Year Re-Evaluation Date:

3-1-2020

Literature

State of Maine Bureau of Public Lands (no date). State Statutes, Title 12 (revised). Bureau of Public Lands, Augusta.

USDI-Petit Manan NWR 2001). Final Environmental Assessment for Public Hunting on Petit Manan National Wildlife Refuge. Refuge files. 14 pp.

Compatibility Determination – Maine Coastal Islands National Wildlife Refuge

Recreational Blueberry Picking

Refuge Name: Petit Manan NWR

Establishing and Acquisition Authority(ies): Authorized through an Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes. 16 U.S.C. 667b-667d and Established under the authority of the Migratory Bird Conservation Act, as amended (16 USC 715-715r).

Refuge Purpose(es):

- A) “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.” 16 U.S.C. 715d (Migratory Bird Conservation Act)
- (B) “... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species ...” 16 U.S.C. 460k-1 (Refuge Recreation Act)
- (C) “...particular value in carrying out the national migratory bird management program.” 16 U.S.C. 667b-667d (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes).
- (D) “... the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions ...” 16 U.S.C. 3901(b), 100 Stat. 3583 (Emergency Wetlands Resources Act of 1986).

National Wildlife Refuge System Mission: The mission of the National Wildlife 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 in the United States for the benefit of present and future generations of Americans.

Description of Use:

(a) What is the use? Is the use a priority public use? The use is recreational blueberry picking, which is not a priority public use of the National Wildlife Refuge System.

(b) Where would the use be conducted? Recreational blueberry picking occurs within 31 acres of blueberry fields on the portion of the refuge known as Petit Manan Point. The fields occur along two interpretive foot trails and a Refuge maintained road. The road and trails provide safe and easy access to the fields for those involved in this activity.

(c) When would the use be conducted? The use is limited to a one month period and occurs annually throughout the month of August.

(d) How would the use be conducted? Individuals seeking blueberries are allowed to enter the fields and hand pick the fruit for personal consumption. This activity attracts less than fifty people throughout the entire month of August. Blueberry harvesting is allowed only during daylight hours and use of rakes is prohibited. The quantity of blueberries that are removed, as a result of this use, is less than 1% of the total blueberries produced within the five fields which together total 31 acres.

(e) Why is the use being proposed? Recreational blueberry picking is allowed at Petit Manan Point because it is a traditional use of the area. This use is known to have occurred in the area for hundreds of years.

Availability of Resources: The resources necessary to provide and administer this use are available within current and anticipated Refuge budgets. Staff time associated with the administration of this use is primarily related to answering general questions from the public and monitoring impacts of the use on refuge resources. This activity is administered by the Refuge staff, who assess the interactions among user groups and any related public use impacts. Resource impacts will be monitored by the Wildlife Biologist, under the supervision of the Refuge Manager. The use of the refuge staff to monitor the impacts of public uses on refuge resources, and visitors is required for administering all refuge public uses. Therefore, these responsibilities and related equipment are accounted for in budget and staffing plans.

The annualized costs associated with the administration of recreational berry picking on the Refuge is estimated below:

Resource impacts/monitoring	\$500
Visitor impacts/provide information to public	\$500
Vehicle maintenance and miscellaneous supplies	\$100
\$Total	\$1,100

FY2004 Refuge Budget Allocation

Salaries	\$428,609.00
Fixed Costs	\$64,613.00
Annual Maintenance	\$34,100.00
Total Available Funds	\$527,322.00

Anticipated Impacts of the Use: No impacts are expected on any threatened or endangered species, whether Federally listed or State listed species. Providing the opportunity for berry pickers to harvest blueberries on the refuge provides them with an opportunity to observe wildlife and to view Service wildlife habitat management projects. There have been no indications that harvesting blueberries on Petit Manan causes problems for wildlife other than minimal and temporary disturbance caused by the mere presence of humans.

Public Review and Comment:

This determination is being prepared concurrently with the Comprehensive Conservation Plan (CCP). The listed use has been discussed at CCP public meetings and has been identified in the CCP Planning Update. Further public comment opportunities were afforded when the Draft CCP/EIS was released for a 60-day review. No significant changes occurred between draft and final plans.

Determination Check one below):

Use is Not Compatible

Use is Compatible

Stipulations Necessary to Ensure Compatibility:

Hand raking of blueberries would not be permitted to ensure that berries are left for wildlife.

Refuge staff will continue to monitor berry pickers and ensure they have an insignificant impact on wildlife.

Justification:

Recreational harvesting of blueberries within Petit Manan NWR will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the Refuge was established.

Signature: Refuge Manager:

Clayton W. Blain 3-23-2005
(Signature and Date)

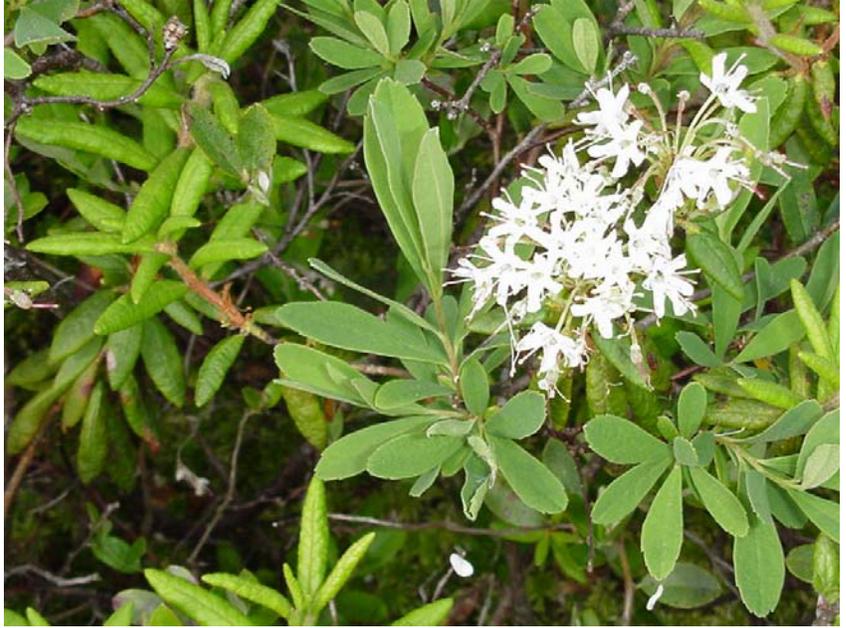
Concurrence: Regional Chief:

Anthony D. Leje March 28, 2005
(Signature and Date)

Mandatory 10-year Re-evaluation Date:

3-1-2015

Appendix D



Labrador tea
USFWS photo

Wilderness Inventory and Study

- Introduction
- Wilderness Inventory
- Wilderness Study
- Wilderness Evaluation
- Wilderness Study Area Maps

Wilderness Inventory and Study — Maine Coastal Islands National Wildlife Refuge

Introduction

The purpose of a wilderness review is to identify and recommend for Congressional designation National Wildlife Refuge System (System) 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 conducted in accordance with the refuge planning process outlined in 602 FW 1 and 3, including public involvement and the National Environmental Policy Act (NEPA) compliance.

There are three phases to the wilderness review process: (1) inventory, (2) study; and (3) recommendation. Lands and waters that meet the minimum criteria for wilderness are identified in the inventory phase. These areas are called wilderness study areas (WSAs). In the study phase, a range of management alternatives are evaluated to determine if a WSA is suitable for wilderness designation or management under an alternate set of goals and objectives that do not involve wilderness designation. The findings of the study determine whether we will recommend an area of wilderness designation in the final CCP.

The recommendation phase consists of forwarding or reporting any wilderness recommendations from the Director through the Secretary and the President to Congress in a wilderness study report. Congress has reserved the authority to make final decisions on wilderness designation. The wilderness study report is prepared after the Record of Decision for the Final CCP/EIS has been signed.

Areas recommended for designation are managed to maintain wilderness character in accordance with management goals, objectives, and strategies outlined in the final CCP until Congress makes a decision or the CCP is amended to modify or remove the wilderness proposal.

This appendix summarizes the inventory and study phases of the wilderness review for the Maine Coastal Islands National Wildlife Refuge (Refuge).

Wilderness Inventory

The wilderness inventory is a broad look at the planning area to identify WSAs. These are roadless areas that meet the minimum criteria for wilderness identified in Section 2 (c) of the Wilderness Act. A WSA must meet the size criteria (or be a roadless island), appear natural, and provide outstanding opportunities for solitude or primitive recreation. Other supplemental values are evaluated, but not required. Our inventory of roadless areas and islands on the Refuge and application of the wilderness criteria are described in the following sections and summarized in Table D-1.

Identification of Roadless Areas and Roadless Islands

Identification of roadless areas and roadless islands required gathering land status maps, land use and road inventory data, and aerial photographs of existing Refuge mainland tracts and islands. “Roadless” refers to the absence of improved roads suitable and maintained for public travel by means

of motorized vehicles primarily intended for highway use. Only lands currently owned by the Service in fee title were evaluated. These lands included three mainland divisions and 37 islands. We also evaluated the Corea Heath mainland tract, which is a pending transfer from the U.S. Navy. Once transferred, Corea Heath will become a fourth mainland division of Petit Manan Refuge. Each of the mainland divisions and 37 islands are listed in Table D-1 and described in detail in the Final EIS in Chapter 3-Affected Environment.

Evaluation of the Size Criteria

Roadless areas or roadless islands meet the size criteria if any one of the following standards applied.

- An area with over 5,000 contiguous acres. State and private lands are not included in making this acreage determination.
- 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.
- 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.
- An area of less than 5,000 contiguous Federal 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.

None of the mainland division tracts meet the size criteria. All of the 37 islands on the Refuge meet the second size criteria standard. The islands range in size from 0.5 to 1,654 acres. The majority of the islands (73 percent) are 18 acres or less. See Table D-1.

Evaluation of the Naturalness Criteria

In addition to being roadless, a WSA must meet the naturalness criteria. 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 man's 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 human-caused hazards, such as the presence of unexploded ordnance from military activity, and the physical impacts of refuge management facilities and activities are also considered in evaluation of 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 island size, extent of Federal holdings, and physiographic and vegetative characteristics were considered in the evaluation of naturalness for each roadless island.

In the wilderness inventory, specific human impacts were identified that significantly affected the overall apparent naturalness of the islands on the Refuge when considered in combination with size and physical characteristics. The following factors were primary considerations in evaluating naturalness:

- presence of a lighthouse and associated structures, including helicopter pads in some cases;

- substantial private ownership with developments such as private residences or incompatible activities;
- presence of an established research facility; and/or
- significant presence of unexploded ordnance that makes the area unsafe for public use.

Eleven roadless islands do not meet the naturalness criteria based on the presence of one or more of these factors. Seven islands were judged to be unnatural based on the presence of operating light-houses: Petit Manan, Egg Rock, Two Bush, Franklin, Pond, Libby, and Matinicus Islands. Nash Island has an inactive lighthouse and a significant proportion of the island is in private ownership. Seal Island has a Service research camp and unexploded ordnance. Bar and Metinic islands are characterized by significant private land holdings with houses. The naturalness evaluation for each roadless island is summarized in Table D-1.

Evaluation of Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation

In addition to meeting the size and naturalness criteria, a WSA must provide outstanding opportunities for solitude or primitive 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 opportunity “elements” are not well defined by the Wilderness Act but, in most cases, can be expected to occur together. 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.

In the wilderness inventory for the roadless islands in the Petit Manan Refuge Complex, the following factors and their cumulative effects were the primary considerations in evaluating the availability of outstanding opportunities for solitude or primitive recreation:

- island size;
- availability of vegetative screening;
- proximity to or attached to the mainland at low tide in an area with intensive public use;
- presence of an operating lighthouse and associated structures, and ongoing Coast Guard maintenance activities;
- substantial private ownership with developments such as private residences and associated incompatible activities; and/or
- significant presence of unexploded ordnance that makes the area unsafe for public use.

Twenty-two of the islands do not meet either the solitude or primitive recreation criteria. Opportunities for solitude and primitive recreation were judged to be less than outstanding on seven islands (Libby, Petit Manan, Egg Rock, Matinicus Rock, Two Bush, Franklin and Pond Islands) based on the combination of small size and the impacts of operating lighthouses and associated Coast Guard maintenance activities. Seven islands (East Barge, Ship, Trumpet, West Barge, Little Roberts, Roberts, and Little Thrumcap Islands) do not meet these criteria because their small size (ranging in size from 0.5 to 11 acres) and lack of vegetative screening limits opportunities for seclusion and dispersed recreation.

Five islands are close to the mainland or connected to the mainland at low tide in areas subject to intense public use. The intense use and accessibility of these islands in combination with their relatively small sizes limits opportunities for solitude and primitive recreation. Three islands (Nash, Bar, and Metinic Islands) do not meet these criteria due to the extent of private ownership (30 to 50 percent private) and the impacts of associated residential and other uses on the private lands.

The evaluation of opportunities for solitude and primitive recreation for each of the roadless islands is summarized in Table D-1.

Evaluation of Supplemental Values

Supplemental values are defined by the Wilderness Act as "...ecological, geological, or other features of scientific, educational, scenic, or historic value." These values are not required for wilderness but their presence is documented for each island in Table D-1 and Chapter 3- Affected Environment in the final EIS.

Inventory Findings and Wilderness Study Areas

Thirteen islands meet the minimum criteria for a WSA. Six of the islands are in a geographic cluster and are considered one WSA unit. The following WSAs on the Refuge are roadless islands, primarily natural, and offer outstanding opportunities for solitude or primitive recreation. The WSAs are presented on Maps D-1 to D-8.

- Outer Heron Island WSA
- Outer White Island WSA
- Little Marshall WSA
- John's Island WSA
- Bois Bubert Island WSA
- Inner Sand Island WSA
- Halifax Island WSA
- Cross Island WSA Complex (includes Cross, Inner Double Head Shot, Outer Double Head Shot, Mink, Scotch, and Old Man Islands)

Wilderness Study

The eight WSAs found to possess the required wilderness characteristics defined by the Wilderness Act were each further evaluated through the refuge planning process to determine their suitability for designation, management, and preservation as wilderness. Considerations in this evaluation included:

- quality of wilderness values
- evaluation of resource values, public uses, and associated management concerns; and
- capability for management as wilderness or “manageability.”

This information provides a basis to compare the impacts of a range of management alternatives and determine the most appropriate management direction for each WSA.

Evaluation of Wilderness Values

The following information considers the quality of the WSAs’ mandatory and supplemental wilderness characteristics.

Naturalness. All of the WSAs generally appear to have been affected primarily by nature, with the imprint of human uses and activities substantially unnoticeable. The topography and vegetation on all of the islands create a primeval environment.

Cross Island in the Cross Island Complex WSA and Bois Bubert Island WSA are the only WSAs exhibiting signs of human impact. Both islands have private inholdings which are excluded from the WSAs, and do not detract from the WSA’s naturalness. The aquaculture facility off Cross Island affects the viewshed of only a small portion of the island. Service cabins located on Cross and Bois Bubert islands are used to house Refuge or cooperators’ research staff. The Cross Island cabin is a wooden structure, 440 square feet in one open room, with propane gas for lighting and a wood stove for heat and cooking. Bois Bubert has 2 cabins, with one planned to be removed within 2 years. The remaining cabin is a wooden structure, 300 square feet, with an open room and sleeping loft. There is a wood stove for heat and cooking. These facilities have little impact on the quality of natural values because the islands are large and heavily forested.

Outstanding Opportunities for Solitude and Primitive Recreation. With the exception of Bois Bubert Island WSA, all of the WSAs offer outstanding opportunities for both solitude and primitive recreation. Opportunities for primitive recreation are outstanding on the 1,011 acres of Bois Bubert Island owned by the Service. However, seasonal activities associated with the private residences, including ATV use, on the 310 acres of private lands on the west side of the island, can impact opportunities for solitude on the island.

The Cross Island Complex WSA offers the best opportunities for recreation and solitude. The core of this WSA is Cross Island itself, which offers 1,654 acres of undisturbed forest accessible from the mainland by kayak. In fact, this WSA is enhanced by the fact that a person can kayak between each of the 7 forested islands, all of which offer solitude and primitive recreation.

Quality of Supplemental Values. All of the WSAs offer outstanding ecological values with features of scientific, educational, and scenic interest. The undeveloped coastal islands on the Refuge offer a unique, and increasingly rare, opportunity to observe natural processes occurring unimpeded on an island in the Gulf of Maine. They also provide important habitats for Federal- and State-listed, and

rare and declining plant and animal species. In addition, the islands in the Cross Island Complex WSA are of historical and cultural significance to the Passamquoddy Tribes. These resources are described for each island in the final EIS, Chapter 3 - Affected Environment.

Evaluation of Manageability and Other Resource Values and Uses. Each of the eight WSAs on the Refuge can be managed to preserve its wilderness character in perpetuity, recognizing that a “minimum requirement analysis” and “minimum tool” approach will be required. There are no valid existing private rights, or mineral rights, included in any of these WSAs. We specifically excluded all private lands and existing ROWs on Cross and Bois Bubert Islands, and the common boat landing and Lily Pond on Bois Bubert Island to avoid pre-existing private rights conflicts. In addition, the WSA boundaries are defined by the mean high water mark to acknowledge State jurisdiction in the intertidal area.

Existing and proposed public uses and refuge management activities within the WSAs are consistent with management direction in the Wilderness Act and current Service wilderness management policy in the Refuge Manual (6 RM 8). None of the current or expected Refuge management activities and public uses would diminish the wilderness character. These include waterfowl hunting, scientific research, resource monitoring, commercial services such as guided wildlife observation tours, environmental education and low impact recreational activities. There are no plans to construct permanent facilities or structures to accommodate these uses.

In summary, wilderness designation and management of all eight WSAs would be fully compatible with current and proposed Refuge management, and none of the resource values identified above would be forgone or adversely affected as a result of designation.

Development of CCP Alternatives

After evaluating the quality of wilderness values, manageability, and other resource values and uses, and reviewing public comments, the following alternatives were developed and analyzed in the draft and final EISs.

Alternative A (Current Management). Under this alternative, none of the eight WSAs (0 acres) would be recommended suitable for wilderness designation. The islands would be managed to accomplish refuge purposes in accordance with legal and policy guidance for the Refuge System.

Alternative B (Service’s Preferred Alternative). Under this alternative, all eight WSAs (3,125 acres) would be recommended suitable for wilderness designation. Since Congress has reserved the authority to make final decisions on wilderness designation, the wilderness recommendations are preliminary administrative determinations that will receive further review and possible modification by the Director of the Fish and Wildlife Service, the Secretary of the Interior, or the President of the United States. However, the analysis of the environmental consequences of this alternative in Chapter 4 is based on the assumption that Congress would accept the recommendation and designate all eight WSAs as wilderness.

If the eight WSAs are designated as wilderness, they would be managed according to the provisions of the Wilderness Act and Service wilderness management regulations (50 CFR 35) and wilderness management policy in the Refuge Manual (6 RM 8). The areas would be managed to accomplish refuge purposes and the Refuge System mission, while also preserving wilderness character and natural values for future generations. Use of motorized vehicles, motorized equipment, and mechanical transport on the islands may be allowed for emergency purposes and when necessary to meet

minimum requirements for the administration of the area as wilderness and to accomplish refuge purposes. The islands would continue to be accessible by motorboat. Proposed or new refuge management activities, or refuge uses on the islands would be evaluated through a minimum requirements analysis and NEPA compliance to assess potential impacts and identify mitigating measures to protect wilderness character.

The WSA boundaries would be defined by the mean high water mark, and all private lands and ROWs on Cross and Bois Bubert Islands, and Lily Pond and the common boat landing on Bois Bubert Island would be excluded from the respective WSA boundaries.

Under Alternative B, as the private lands and ROWs are acquired on Cross and Bois Bubert Islands, they would be included in the WSA or designated wilderness area through administrative action. In addition, we would conduct another wilderness review in 15 years to evaluate all lands acquired in the interim, simultaneous with our revision of the CCP. There are 87 islands proposed for Service acquisition in this CCP alternative.

Alternative C. Under this alternative, all eight WSAs (3,125 acres) would be recommended suitable for wilderness designation and managed as described in Alternative B above. Under Alternative C, however, future wilderness reviews would be conducted bi-annually to allow us to evaluate newly acquired islands soon after they are acquired. There are 151 islands proposed for Service acquisition in this CCP alternative.

Alternative D. Under this alternative, none of the eight WSAs (0 acres) would be recommended suitable for wilderness designation. This alternative emphasizes a “custodial approach” rather than active management to accomplish refuge purposes. Staffing and resources would be limited. The islands would be closed to public access with the exception of staff-led programs or entry by special use permit.

Alternatives Considered But Eliminated From Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). It was determined that there was no benefit in analyzing partial wilderness alternatives for individual WSAs. All of the islands within the eight WSAs could be managed to preserve their wilderness character in perpetuity. There are no feasible or practical boundary adjustments that would improve the manageability of an individual WSA. Similarly, it was determined that developing one or more alternatives that group WSAs, recommending some for designation and others for alternative management, would not provide any additional information or analysis for the decision-maker.

Public Review and Comment

This proposal has received extensive public and partner review in conjunction with development of the Maine Coastal Islands CCP. The potential for wilderness was discussed at five public meetings and Open Houses held in 2000 as part of the CCP initial public scoping. It was also identified in two newsletters shared with over 1,400 individuals and organizations on our mailing list. Our draft CCP/EIS went out for a 60-day public review in 2004. We received numerous comments on the wilderness proposal, mostly positive. These comments are summarized and responded to in the final EIS, Appendix I - Public Comments and Service Responses. The only change in our wilderness proposal between the draft and final EIS was to clarify that existing private lands and ROWs are excluded, as is the common boat landing and Lily Pond on Bois Bubert Island, and all WSA boundaries are defined by the mean high water mark.

Table D-1 Wilderness Evaluation

Refuge unit and acreage	Yes/no & comments				Parcel qualifies as a wilderness study area (meets criteria 1, 2, and 3a or 3b)
	(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;	(2) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;	(3a) has outstanding opportunities for solitude;	(3b) has outstanding opportunities for a primitive and unconfined type of recreation;	
Mainland units					
<i>Steuben:</i>					
Petit Manan Point, 2,166 acres	No. Less than 5,000 acres; private inholdings.	No. Bisected by roads, powerlines, telephone lines; existing refuge development such as impoundments.	Yes	Yes	No
<i>Gouldsboro:</i>					
Gouldsboro Bay Division, 573 acres	No. Less than 5,000 acres.	No. Interior roads	No. Adjacent private land development.	No. (see 3a)	No
Corea Heath Division, 405 acres	No. Less than 5,000 acres.	No. Significant private inholding, large industrial-type buildings and roads	No. Adjacent private land development.	No. (see 3A)	No
<i>Milbridge:</i>					
Sawyers Marsh Division, 956 acres	No. Less than 5,000 acres.	No. Interior roads.	No. Adjacent town park and private land development.	No. (see 3a)	No

Table D-1 Wilderness Evaluation — Cont'd.

Refuge unit and acreage	Yes/no & comments				Parcel qualifies as a wilderness study area (meets criteria 1, 2, and 3a or 3b)
	(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;	(2) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;	(3a) has outstanding opportunities for solitude;	(3b) has outstanding opportunities for a primitive and unconfined type of recreation;	
Island units <i>Cutler (Cross Island Complex):</i>					
Cross Island NWR, 1,654 acres	Yes. Roadless island.	Yes (not diminished by small FWS cabin or 39 ac inholdings with minor structures or offshore aquaculture facility)	Yes	Yes. Part of 6 island complex.	Yes. Scenic values. Yes
Inner Double Head Shot Island, 8 acres	Yes. Roadless island.	Yes	Yes. Small size, but forested vegetation.	Yes. Part of 6 island complex.	Yes. Scenic values. Yes
Mink Island, 11 acres	Yes. Roadless island.	Yes	Yes	Yes. Part of 6 island complex.	Yes. Scenic values, bald eagle nesting. Yes
Old Man Island, 6 acres	Yes. Roadless island.	Yes	Yes	Yes. Part of 6 island complex.	Yes. Scenic values, seabird nesting, seal haul out area. Yes
Outer Double Head Shot Island, 14 acres	Yes. Roadless island.	Yes	Yes	Yes. Part of 6 island complex.	Yes. Scenic values, seal haul out area. Yes
Scotch Island, 10 acres	Yes. Roadless island.	Yes	Yes. Small size, but forested vegetation	Yes. Part of 6 island complex.	Yes. Scenic values. Yes
<i>Machiasport</i>					
Libby Island, 40 acres	Yes. Roadless island.	No. Operating lighthouse, fog horn, helicopter landing pad; treeless vegetation.	No. Operating lighthouse; occasional disturbance from Coast Guard visits.	No (see 3a)	Yes. Historic lighthouse, scenic values, seabird nesting, seal pupping area. No, also a priority seabird restoration site

Table D-1 Wilderness Evaluation — Cont'd.

Refuge unit and acreage	Yes/no & comments				Parcel qualifies as a wilderness study area (meets criteria 1, 2, and 3a or 3b)
	(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;	(2) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;	(3a) has outstanding opportunities for solitude;	(3b) has outstanding opportunities for a primitive and unconfined type of recreation;	
<i>Jonesport</i>					
Eastern Brothers Island, 17 acres	Yes. Roadless island.	Yes	Yes	Yes	No, due to priority as a seabird restoration site
Halifax Island, 75 acres	Yes. Roadless island.	Yes	Yes	Yes. On Maine Island Trail	Yes
<i>Addison</i>					
Inner Sand Island, 18 acres	Yes. Roadless island.	Yes	Yes	Yes	Yes
Nash Island, 5 acres (total island acreage: 17)	Yes. Roadless island.	No. Inactive lighthouse, sheep grazing on privately owned portion of island.	No. Small size, mostly privately owned with sheep grazing, treeless vegetation.	No. (see 3a)	No
<i>Milbridge</i>					
Bois Bubert Island, 1,190 acres	Yes. Roadless island.	Yes. Not diminished by private camps on west side of island or the 2 FWS cabins	No. Seasonal activity w/private camps, including ATV use.	Yes. On Maine Island Trail	Yes
<i>Steuben</i>					
Abbott Island, 4 acres	Yes. Roadless island.	Yes	No. Small size and within a few hundred feet of the mainland, private lands, and Pigeon Hill Road.	No. (see 3a)	No

Table D-1 Wilderness Evaluation — Cont'd.

Refuge unit and acreage	Yes/no & comments				Parcel qualifies as a wilderness study area (meets criteria 1, 2, and 3a or 3b)	
	(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;	(2) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;	(3a) has outstanding opportunities for solitude;	(3b) has outstanding opportunities for a primitive and unconfined type of recreation;		
Petit Manan Island, 10 acres	Yes. Roadless island.	No. Operating lighthouse, fog horn, helicopter landing pad, several Coast Guard structures, research facilities.	No. Operating lighthouse and fog horn, active maintenance by Coast Guard, and commercial seabird viewing tours just offshore.	No. (see 3a)	Yes. Historic lighthouse, scenic values, seabird nesting.	No
Sally Island, 1 acre	Yes. Roadless island.	Yes	No. Small size, connected to mainland at low tide.	No. (see 3a)	Yes. Scenic values, eagle nest.	No
<i>Winter Harbor</i>						
Egg Rock, 12 acres	Yes. Roadless island.	No. Operating lighthouse, fog horn, separate Coast Guard structures.	No. Operating lighthouse, other Coast Guard structures, active maintenance, commercial tour boat traffic just offshore.	No. (see 3a)	Yes. Historic lighthouse, scenic values, seabird nesting, seal haulout areas.	No
<i>Town of Swan's Island</i>						
John's Island, 43 acres	Yes. Roadless island.	Yes	Yes	Yes	Yes. Scenic values, seabird nesting, rare plants.	Yes

Table D-1 Wilderness Evaluation — Cont'd.

Refuge unit and acreage	Yes/no & comments			Parcel qualifies as a wilderness study area (meets criteria 1, 2, and 3a or 3b)		
	(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;	(2) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;	(3a) has outstanding opportunities for solitude; Or (3b) has outstanding opportunities for a primitive and unconfined type of recreation;		(4) contains ecological, geological or other features of scientific, educational, scenic, or historical value.	
<i>Tremont</i>						
Bar Island, 17 acres	Yes. Roadless island.	No. Half of island privately owned, house next to Refuge land.	No. Proximity of private land, private residence, and associated recreational activity.	No. (see 3a)	Yes. Scenic values.	No
<i>Tremont</i>						
East Barge Island, 0.5 acre	Yes. Roadless island.	Yes	No. Small size, treeless vegetation, near populated area.	No. (see 3a)	Yes. Scenic values, seabird nesting, seal haulout area.	No
Ship Island, 11 acres	Yes. Roadless island.	Yes	No. Small size, treeless vegetation, near populated area.	No. (see 3a)	Yes. Scenic values, seabird nesting.	No
Trumpet Island, 3 acres	Yes. Roadless island.	Yes	No. Small size, treeless vegetation, near populated area.	No. (see 3a)	Yes. Scenic values, seabird nesting.	No
West Barge Island, 0.5 acre	Yes. Roadless island.	Yes	No. Small size, treeless vegetation, near populated area.	No. (see 3a)	Yes. Scenic values, seabird nesting, seal haulout area.	No
<i>Vinalhaven</i>						
Little Roberts Island, 1 acre	Yes. Roadless island.	Yes	No. Small size, treeless vegetation.	No (see 3a)	Yes. Scenic values, seabird nesting.	No
Roberts Island, 10 acres	Yes. Roadless island.	Yes	No. Small size, treeless vegetation.	No (see 3a)	Yes. Scenic values, seabird nesting.	No

Table D-1 Wilderness Evaluation — Cont'd.

Refuge unit and acreage	Yes/no & comments				Parcel qualifies as a wilderness study area (meets criteria 1, 2, and 3a or 3b)	
	(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;	(2) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;	(3a) has outstanding opportunities for solitude;	(3b) has outstanding opportunities for a primitive and unconfined type of recreation;		(4) contains ecological, geological or other features of scientific, educational, scenic, or historical value.
Seal Island NWR, 65 acres <i>Matinicus Isle</i>	Yes. Roadless island.	No. Research camp, unexploded ordnance	Yes	Yes	Yes. Scenic values, seabird nesting, seal pupping area.	No
Matinicus Rock, 28 acres	Yes. Roadless island.	No. Operating lighthouse and fog horn, maintenance activities, staffed seasonally.	No. Operating lighthouse, active maintenance.	No. (see 3a)	Yes. Historic lighthouse and structures, scenic values, seabird nesting.	No
Metinic Island, 149 acres (total island acreage: 346) <i>Saint George</i>	Yes. Roadless island.	No. Mostly privately owned, with houses, fencing, and sheep grazing, research facilities.	No. Houses, partial private ownership, fencing, sheep grazing.	No. (see 3a)	Yes. Scenic values, seabird nesting.	No
Two Bush Island, 8 acres <i>Friendship</i>	Yes. Roadless island.	No. Operating lighthouse and fog horn, maintenance activities.	No. Lighthouse and maintenance, small size, treeless vegetation.	No. (see 3a)	Yes. Historic lighthouse, seabird nesting.	No
Franklin Island NWR, 12 acres	Yes. Roadless island.	No. Operating lighthouse, active maintenance.	No. Operating lighthouse, maintenance activities.	No. (see 3a)	Yes. Scenic values, seabird and osprey nesting.	No

Table D-1 Wilderness Evaluation — Cont'd.

Refuge unit and acreage	Yes/no & comments				Parcel qualifies as a wilderness study area (meets criteria 1, 2, and 3a or 3b)	
	(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;	(2) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;	(3a) has outstanding opportunities for solitude;	(3b) has outstanding opportunities for a primitive and unconfined type of recreation;		(4) contains ecological, geological or other features of scientific, educational, scenic, or historical value.
<i>South Bristol</i>						
Little Thrumcap Island, 9 acres	Yes. Roadless island.	Yes	No. Small size, treeless vegetation, connects by sandbar to Big Thrumcap Is., proximity to development and recreational activities.	No. (see 3a)	Yes. Scenic value, seabird nesting.	No
<i>Boothbay</i>						
Outer White Island, 16 acres	Yes. Roadless island.	Yes	Yes	Yes	Yes. Scenic value, seabird nesting.	Yes
Outer Heron Island, 66 acres	Yes. Roadless island.	Yes	Yes	Yes	Yes. Scenic values, seabird, wading bird, and eagle nesting.	Yes
<i>Phippsburg</i>						
Pond Island, 10 acre	Yes. Roadless island.	No. Operating lighthouse and fog horn, active maintenance.	No. Operating lighthouse, close proximity to mainland and heavy recreational use, small size, treeless vegetation.	No. (see 3a)	Yes. Lighthouse, scenic values, seabird nesting.	No

Table D-1 Wilderness Evaluation — Cont'd.

Refuge unit and acreage	Yes/No & comments				Parcel qualifies as a wilderness study area (meets criteria 1, 2, and 3a or 3b)	
	(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;	(2) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;	(3a) has outstanding opportunities for solitude;	(3b) has outstanding opportunities for a primitive and unconfined type of recreation;		(4) contains ecological, geological or other features of scientific, educational, scenic, or historical value.
<i>Harpowell</i>						
Ram Island, 10 acres	Yes. Roadless island.	Yes	No. Close proximity to mainland and recreational and commercial activity, small size, treeless vegetation.	No. (see 3a)	Yes. Scenic values, seabird nesting.	No
Upper Flag Island, 30 acres	Yes. Roadless island.	Yes	No. Close proximity to mainland and heavy recreational activity.	No. (see 3a)	Yes. Scenic values, seabird nesting.	No
<i>Roque Bluffs</i>						
Schoppee Island, 18 acres	Yes. Roadless island.	Yes	No. Close proximity to mainland and heavy recreational activity.	No. (see 3a)	Yes. Scenic values, eagle nesting.	No
<i>Swans Island</i>						
Little Marshall Island, 14 acres	Yes. Roadless island.	Yes	Yes	Yes	Yes. Scenic values, eagle nesting.	Yes

Outer Heron Island WSA (65-279*)



66 Acres

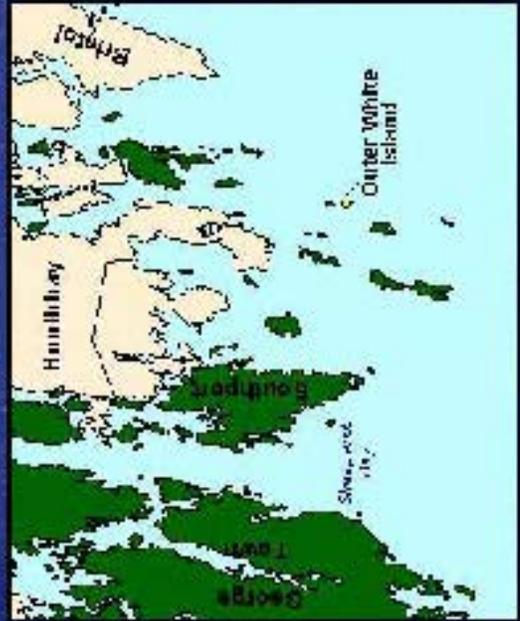
Supplemental values :
scenic, seabird nesting,
bald eagle nesting

WSA boundary is defined
by Mean High Water

* Maine Coastal Island
Registry Number



Outer White Island WSA (65-278*)



16 Acres

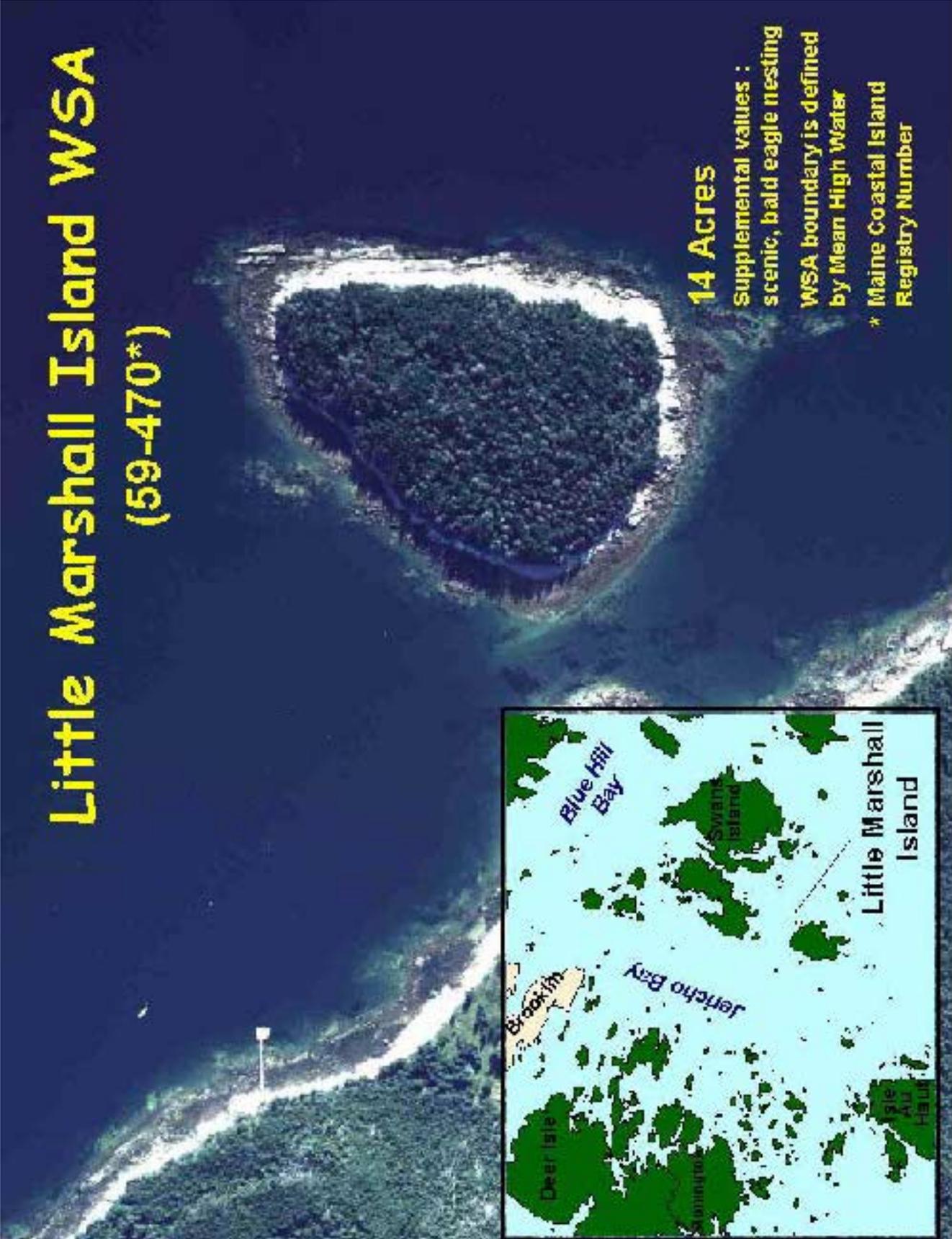
Supplemental values :
scenic, seabird nesting,
wading bird nesting

WSA boundary is defined
by Mean High Water

* Maine Coastal Island
Registry Number

Little Marshall Island WSA (59-470*)

14 Acres
Supplemental values :
scenic, bald eagle nesting
WSA boundary is defined
by Mean High Water
* Maine Coastal Island
Registry Number



John's Island WSA (59-483*)

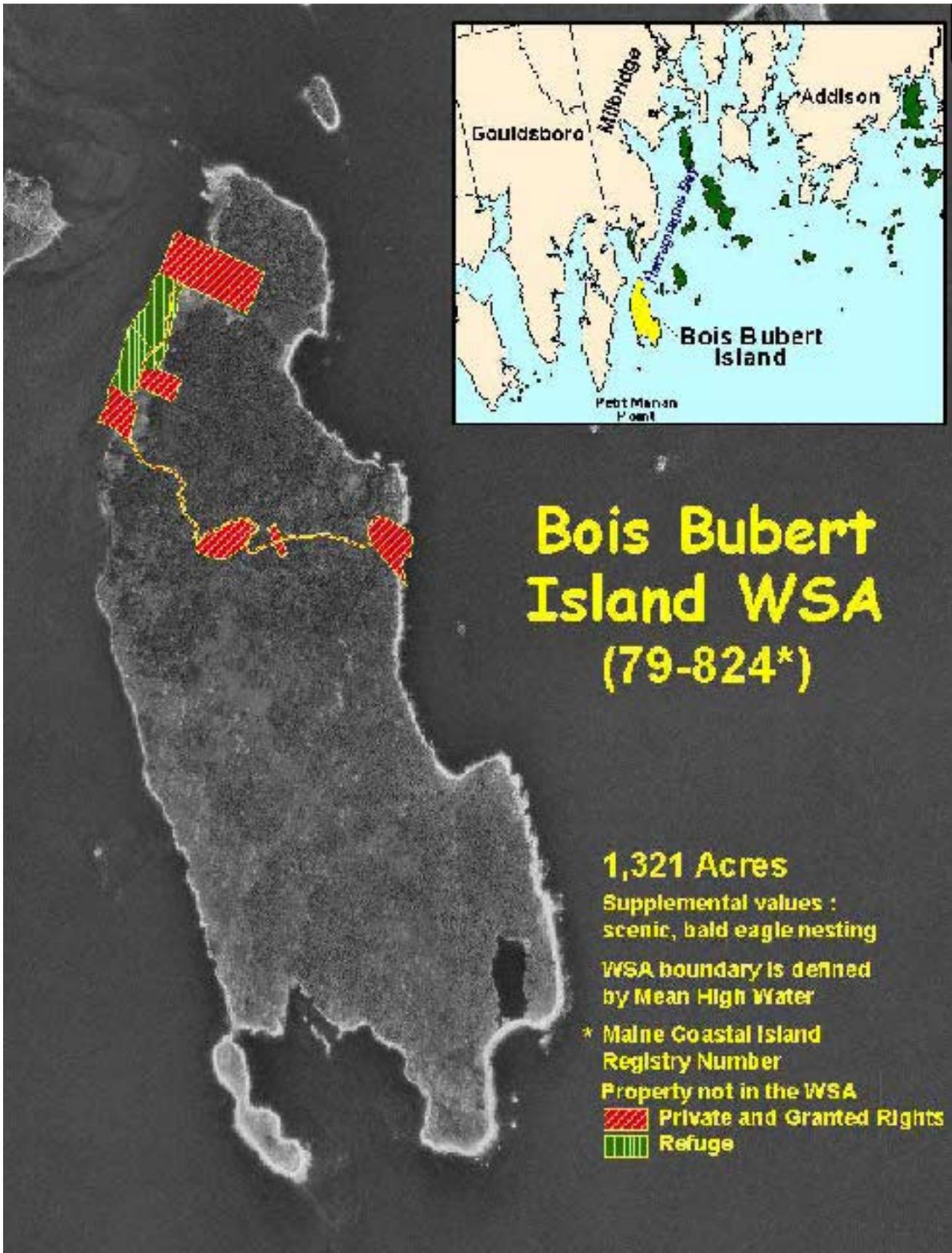


43 Acres

**Supplemental values :
scenic, seabird nesting
WSA boundary is defined
by Mean High Water**

*** Maine Coastal Island
Registry Number**





Inner Sand Island WSA (79-614*)

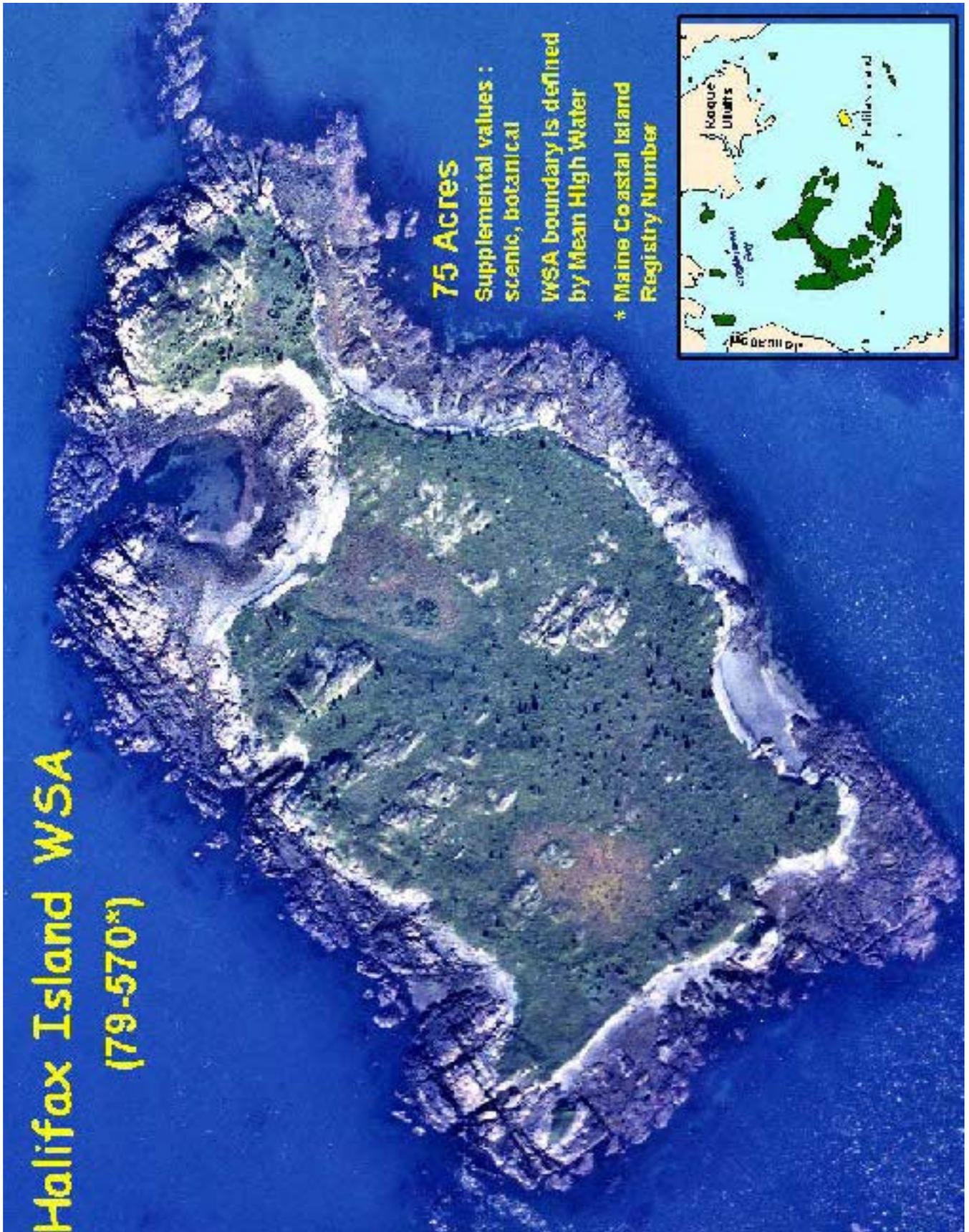
18 Acres

**Supplemental values :
scenic, seabird nesting**

**WSA boundary is defined
by Mean High Water**

*** Maine Coastal Island
Registry Number**





**Halifax Island WSA
(79-570*)**

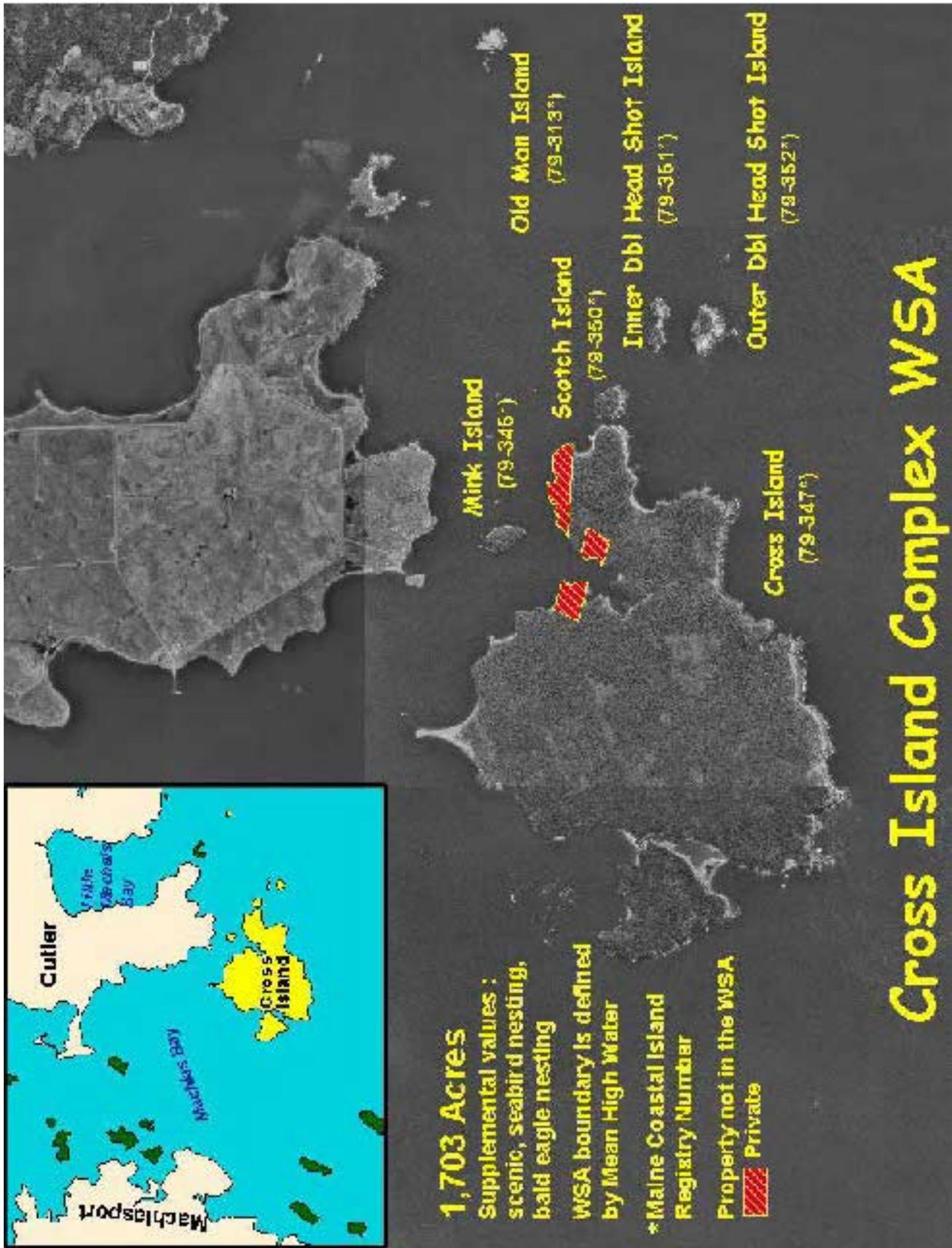
75 Acres

**Supplemental values :
scenic, botanical**

**WSA boundary is defined
by Mean High Water**

*** Maine Coastal Island
Registry Number**





Appendix E



Inner and Outer Double Head Shot Islands
USFWS photo

List of Preparers

- Core Planning Team
- Assisting in Land Protection Strategies
- Other Service Personnel Contributing to Plan
- Others Who Contributed to Plan

Core Planning Team

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Appendix F



Raccoon
USFWS photo

Refuge Operations Needs System (RONS) and Management Maintenance System (MMS)

- Projects currently in the RONS Database
- Projects proposed for the RONS Database
- Projects currently in the MMS Database

Table F-1. Proposed projects currently in the RONS Tier 1 database.

Project #	Project Description	Staffing (FTE's)	Cost Year 1 (x 1000)	Cost, recurring (x1000)	Project Duration (years)
98016	Provide handicap viewing opportunities at Meadowbrook Flowage		36		1
00012	Enhance outreach and education by developing informational kiosks, informational signing for islands, and support for a seasonal mainland interpretive intern.		100	8	15
00001	Improve public use and education programs -hire an Outdoor Recreation Planner (GS-7) .	1.0	118	53	15
00002	Plan and implement public use program in Milbridge - hire an Outdoor Recreation Planner (GS-11).	1.0	139	74	15
00004	Expand seabird restoration activities - hire a Wildlife Biologist (GS-11).	1.0	139	74	15
00005	Expand baseline inventories of islands, mainland units and rare plant communities - hire a Wildlife Biologist (GS-9)	1.0	128	65	15
00006	Study intertidal and marine resources and their availability to coastal wildlife - hire a Marine Ecologist (GS-11)	1.0	139	74	15
00007	Enhance law enforcement to ensure resource protection and visitor safety -hire a seasonal law enforcement officer (GS-5).	0.5	64	26	15
00008	Improve administrative support to assist with budget, personnel, and public inquiries - hire an administrative assistant (GS-6)	1.0	114	49	15
00009	Improve maintenance support to enhance boundary signing and maintaining facilities - hire a maintenance worker (WG-8).	1.0	119	54	15
00010	Improve maintenance of visitor facilities - hire a maintenance worker (WG-06).	1.0	114	49	15
00011	Restore seabirds to six additional historic nesting islands; maintain existing 6 (12 total).		130	60	15
99001	Improve resource protection, enforce seasonal closures, and hunting regulations - hire a full-time Law Enforcement Officer (GS-9).	1.0	193	66	15

Table F-2. Proposed projects currently in the RONS Tier 2 database.

Project #	Project Description	Staffing (FTE=s)	Cost Year 1 (x 1000)	Cost, recurring (x1000)	Project Duration (years)
99003	Develop interpretive trail, observation platform and parking area at Gouldsboro Bay Division - hire Maintenance Worker (WG-06).	1.0	123	49	15
98004	Expand natural resource inventories on recently acquired properties		66	15	15
98009	Improve grassland management to maintain habitat diversity		131	3	15
99002	Construct Education Center/ Refuge Headquarters Complex		3,000 (const)	20	15

Table F-3. Proposed projects not currently in the RONS database and their relationship to Refuge goals.

Goal 1: perpetuate the biological diversity and integrity of upland cover types on the refuge complex’s mainland coast to sustain high quality habitat for migratory birds

Project Description	Staffing (FTEs)	Cost Year 1 (x\$1000)	Cost recurring (x \$1000)	Project Duration (years)
Wildlife Biologist to oversee all mainland biological programs- (GS-11)	1.0	59	59	15
Initiate rare plant surveys on Sawyer’s Marsh and Gouldsboro Bay Divisions. Document locations and densities for baseline. Develop monitoring protocol.		15	15	3
Initiate study to evaluate the effects of deer browsing on rare plant communities and structure of understory.		5	2	7
Monitor refuge lands for invasive species. Eradicate invasive plants and restore native vegetation.		50	50	15

Goal 3: perpetuate the biological diversity and integrity of upland cover types on the refuge complex’s coastal islands to sustain high quality habitat for nesting bald eagles and migratory songbirds and raptors, and to protect rare plant sites

Project Description	Staffing (FTEs)	Cost Year 1 (x\$1000)	Cost recurring (x \$1000)	Project Duration (years)
Conduct spring and fall neotropical bird and raptor monitoring on at least three Refuge islands to determine their use of habitats.		20	20	5
Complete cover type mapping for island habitats and incorporate into GIS.		10		1
Monitor use of offshore islands by neotropical migrants, shorebirds and raptors. (20 islands)		120	120	5
Develop island specific Habitat Management Plans - Hire Wildlife Biologist GS-9.	1.0	128	63	15
Conduct baseline plant and wildlife inventories on at least six Refuge islands per year until all islands have been inventoried - (87 islands)		25	25	15
Conduct baseline plant and wildlife inventories on at least thirteen islands per year until all islands have been inventoried - (151 islands)		52	52	15

Proposed projects not currently in the RONS Database

Goal 4: protect the high quality wetland habitats on the refuge complex's coastal islands to benefit nesting and migrating shorebirds and waterfowl

Project Description	Staffing (FTEs)	Cost Year 1 (x\$1000)	Cost recurring (x \$1000)	Project Duration (years)
Initiate research and monitoring on intertidal and marine habitats surrounding Refuge lands, including the effects of aquaculture & intertidal harvesting (20islands)		145	145	8
Conduct fall shorebird migration surveys on at least three Refuge islands to determine use of habitats & concentrations.		10	10	5
Participate in cooperative effort to survey, band, and monitor movements of wintering purple sandpipers on coastal islands.		3	3	5

Goal 5: protect and restore nesting seabird populations on the refuge complex's coastal islands to contribute to regional and international seabird conservation goals

Project Description	Staffing (FTEs)	Cost Year 1 (x\$1000)	Cost recurring (x \$1000)	Project Duration (years)
Wildlife Biologist to oversee all island programs - (GS-11)	1.0	65	65	15
Contract with a local trapper to actively manage owl and mammal predators at seabird restoration sites experiencing high levels of predation.		2	2	15
Provide National Audubon funding to support cooperatively managed seabird colonies at Pond, Seal and Matinicus Rock.		25	25	15
Provide continued funding to support restoration programs at Petit Manan, Ship and Metinic Islands.		36	36	15
Purchase three burrow scopes to determine productivity of alcid burrows at Seal, Matinicus Rock, and Petit Manan Island.		15		1
Initiate three new alcid restoration projects on islands supporting puffin and razorbill habitat.		45	30	15
Restore seabirds to twelve historic islands (18 total). Hire Wildlife Biologist GS-12.	1.0	254	159	15
Purchase new 23' boat to support new restoration projects for terns and alcids.		50		1

Appendix F – Refuge Operations Needs System and Management Maintenance System

Goal 6: provide enjoyment and stewardship of coastal maine wildlife and their habitats by providing priority, wildlife-dependent recreational and educational opportunities

Project Description	Staffing (FTEs)	Cost Year 1 (x\$1000)	Cost recurring (x \$1000)	Project Duration (years)
Outdoor Recreation Planner to oversee all public use programs (GS-11)	1.0	65	65	15
Provide staffing for Coastal Education Center - Outdoor Recreation Planner - (GS-7)	1.0	118	53	15
Produce a video and interactive computer program about seabird restoration for use in classrooms and at the Coastal Education Center		60		2
Install web-cams at two restored seabird colonies and develop a web-based environmental education program.		140	3	15
Produce interpretive panels for Birch Point Trail and Halifax Island.		25		1
Provide interpretive services on refuge’s mainland divisions. (2 summer interns)		8	8	15
Expand outreach, education and interpretation of coastal resources - (ORP GS-11, GS-7)	2.0	257	127	15
Construct a parking lot and interpretive trail at the Sawyer’s Marsh Division.		25		1
Install refuge interpretive panels at three rest areas and three Tourism Centers.		8		1
Develop and produce five refuge brochures interpreting natural and cultural resources for use in Chambers of Commerce and Tourist Welcome Centers.		102		1
Provide interpretive interns to all tour boats visiting refuge islands (7)		25	25	9
Improve outreach aboard commercial tour boats to refuge islands through interpretive panels and seasonal interpreters (3 summer interns).		13	5	15
Increase law enforcement to oversee Refuge Hunt Program, enforce seasonal closures and educate visitors. (LE- GS-9)	1.0	128	63	15
Produce refuge brochures on hunting opportunities and ALeave No Trace@ principles		6		1

Proposed projects not currently in the RONS Database

Increase law enforcement to enforce closure of all refuge property to public use (3 LE - GS-5/7)	3.0	351	156	15
Construct one barrier-free observation platform and one photo blind on one of the three mainland divisions.		30		1
Provide regulatory and interpretive signing on all Refuge islands and future acquisitions (87 new islands).		65		15
Provide regulatory and interpretive signing on all Refuge islands and future acquisitions (151 new islands)		138		15

Goal 7: protect the integrity of coastal Maine wildlife and habitats through an active land acquisition and protection program

Project Description	Staffing (FTEs)	Cost Year 1 (x\$1000)	Cost recurring (x \$1000)	Project Duration (years)
Improve maintenance support of all Complex programs. (WG-8)	1.0	105	40	15
Restore historic lighthouse structures to national and state preservation standards (WG-7)	1.0	116	51	15
Provide maintenance and boat support for all Refuge programs on existing lands - Small Craft Operator - (WG-8)	1.0	105	40	15

Goal 8: communicate and collaborate with local communities, federal, state and local representatives, and other organizations throughout coastal Maine to further the mission of the national wildlife refuge system.

Project Description	Staffing (FTEs)	Cost Year 1 (x\$1000)	Cost recurring (x \$1000)	Project Duration (years)
Purchase a new phone system capable of providing current Refuge regulations, events and information.		0.5		
Provide AM radio frequency for visitors to receive current refuge information, openings/closings		30	2	15

Grand Total for RONS Projects from Tables F-1, F-2, and F-3.

Year 1 - Project Costs \$5,870,000

Recurring Project Costs \$1,184,000

Table F-4. *Projects currently backlogged in the Maintenance Management System (MMS).*

Project #	Project Description	Cost Estimate (\$1,000)
98500	Rehabilitate Deteriorated Two Bush Island Lighthouse	\$76
00002	Rehabilitate Historic Oil House Building - Petit Manan Island	315
03002	Repair Historic Matinicus Rock Light Tower #2	125
00004	Rehabilitate Egg Rock Light Station	500
98500	Remove debris and fill foundations on three Lighthouse Islands	101
00006	Replace Egg Rock Boat Ramp	387
00017	Replace 1998 Dodge Grand Caravan - Milbridge	28
02001	Replace 1998 Dodge Grand Caravan - Rockport	28
02007	Replace 1999 Dodge Ram 4X4 V8	25
02005	Replace 1999 Ford Explorer	25
02008	Replace 1998 23' Mako with twin Honda 90 HP motors	45
02003	Replace 1999 Dodge Ram 4X4 V-8 truck	25
02002	Replace 2001 Dodge Ram V10 truck	32
00013	Repair Mague Flowage Dike	41
03001	Replace 1992, 18' Aluminum Skiff, Motor, and Trailer	25
	GRAND TOTAL	1,778



Snow geese
USFWS photo

Glossary of Terms and Acronyms

- Terms
- Acronyms

accessibility — the state or quality of being easily approached or entered, particularly as it relates to complying with the Americans With Disabilities Act

accessible facilities — structures accessible for most people with disabilities without assistance; facilities that meet UFAS standards; ADA-accessible [e.g., parking lots, trails, pathways, ramps, picnic and camping areas, restrooms, boating facilities (docks, piers, gangways), fishing facilities, playgrounds, amphitheaters, exhibits, audiovisual programs, and wayside sites.] Also referred to as “barrier-free”

aggregate — many parts considered together as a whole

agricultural land — nonforested land (now or recently orchards, pastures, or crops)

alternative — a reasonable way to fix an identified problem or satisfy a stated need [40 CFR 1500.2 (cf. “management alternative”)]

amphidromous fish — fish that can migrate from fresh water to the sea or the reverse, not only for breeding, but also regularly at other times during their life cycle

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.

approved acquisition boundary — a project boundary that the Director of the U.S. Fish and Wildlife Service approves upon completion of the planning and environmental compliance process. An approved acquisition boundary only designates those lands which the Service has authority to acquire or manage through various agreements. The approval of an acquisition boundary does not grant the Service jurisdiction or control over lands within the boundary, and it does not make lands within the refuge boundary part of the National Wildlife Refuge System. Lands do not become part of the System until the Service buys them or they are placed under an agreement that provides for their management as part of the System.

anadromous fish — from the Greek, literally “up-running”; fish that spend a large portion of their life cycle in the ocean and return to freshwater to breed

aquatic — growing in, living in, or dependent upon water

aquatic barrier — any obstruction to fish passage

aquifer — a formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs

area of biological significance — cf. “special focus area”

area-sensitive species — species that require large areas of contiguous habitat

assemblage — in conservation biology, a predictable and particular collection of species within a biogeographic unit (e.g., ecoregion or habitat)

barrens — a colloquial name given to habitats with sparse vegetation or low agricultural productivity

barrier-free — cf. “accessible facilities”

basin — the land surrounding and draining into a water body (cf. “watershed”)

benthic — living at, in, or associated with structures on the bottom of a body of water

best management practices — land management practices that produce desired results [n.b. Usually describing forestry or agricultural practices effective in reducing non-point source pollution, like reseeding skidder trails or not storing manure in a flood plain. In their broader sense, practices that benefit target species.]

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

bog — a poorly drained area rich in plant residues, usually surrounded by an area of open water, and having characteristic flora

breeding habitat — habitat used by migratory birds or other animals during the breeding season

buffer zones — land bordering and protecting critical habitats or water bodies by reducing runoff and nonpoint source pollution loading; areas created or sustained to lessen the negative effects of land development on animals, plants, and their habitats

candidate species — species for which we have sufficient information on file about their biological vulnerability and threats to propose listing them

catadromous fish — fish that spend most of their lives in fresh water, but migrate to sea to reproduce

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]

CFR — the Code of Federal Regulations

Challenge Grant Cost Share Program — a Service-administered grant program that provides matching funds for projects supporting natural resource education, management, restoration, or protection on Service lands, other public lands, and private lands

citizen monitoring projects — projects coordinated locally to conduct environmental inventories; their data expand what agencies know, and are available to anyone interested

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

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]

concern — cf. “issue”

conifer — a tree or shrub in the phylum Gymnospermae whose seeds are borne in woody cones. There are 500–600 species of living conifers (Norse 1990)

conservation — managing natural resources to prevent loss or waste [n.b. Management actions may include preservation, restoration, and enhancement.]

conservation agreements — written agreements among two or more parties for the purpose of ensuring the survival and welfare of unlisted species of fish and wildlife or their habitats or to achieve other specified conservation goals. Participants voluntarily commit to specific actions that will remove or reduce threats to those species.

conservation easement — a legal agreement between a landowner and a land trust (e.g., a private, nonprofit conservation organization) or government agency that permanently limits the uses of a property to protect its conservation values

cool-season grass — introduced grass for crop and pastureland that grows in spring and fall and is dormant during hot summer months

cooperative agreement — a usually long-term habitat protection action, which can be modified by either party, in which no property rights are acquired. Lands under a cooperative agreement do not necessarily become part of the National Wildlife Refuge System

critical habitat — according to U.S. Federal law, the ecosystems upon which endangered and threatened species depend

cultural resource inventory — a professional study to locate and evaluate evidence of cultural resources within a defined geographic area [n.b. Various levels of inventories may include background literature searches, comprehensive field examinations to identify all exposed physical manifestations of cultural resources, or sample inventories for projecting site distribution and density over a larger area. Evaluating identified cultural resources to determine their eligibility for the National Register follows the criteria in 36 CFR 60.4 (cf. FWS Manual 614 FW 1.7).]

cultural resource overview — a comprehensive document prepared for a field office that discusses, among other things, project prehistory and cultural history, the nature and extent of known cultural resources, previous research, management objectives, resource management conflicts or issues, and a general statement of how program objectives should be met and conflicts resolved [An overview should reference or incorporate information from a field offices background or literature search described in section VIII of the Cultural Resource Management Handbook (FWS Manual 614 FW 1.7).]

database — a collection of data arranged for ease and speed of analysis and retrieval, usually computerized

dedicated open space — land to be held as open space forever

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

designated wilderness area — an area designated by Congress as part of the National Wilderness Preservation System [FWS Manual 610 FW 1.5 (draft)]

diadromous — fish that migrate from freshwater to saltwater or the reverse; a generic term that includes anadromous, catadromous, and amphidromous fish

digitizing — the process of converting maps into geographically referenced electronic files for a geographic information system (GIS)

disturbance — any relatively discrete event in time that disrupts ecosystem, community, or population structure and changes resources, substrate availability, or the physical environment

donation — a citizen or group may wish to give land or interests in land to the Service for the benefit of wildlife. Aside from the cost factor, these acquisitions are no different than any other means of land acquisition. Gifts and donations have the same planning requirements as purchases.

drumlin — a ridge or oval hill with a smooth summit composed of material deposited by a glacier

easement — an agreement by which landowners give up or sell one of the rights on their property [e.g., landowners may donate rights-of-way across their properties to allow community members access to a river (cf. “conservation easement”).]

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

ecosystem service — a benefit or service provided free by an ecosystem or by the environment, such as clean water, flood mitigation, or groundwater recharge

ecotourism — visits to an area that maintains and preserves natural resources as a basis for promoting its economic growth and development

ecosystem approach — a way of looking at socio-economic and environmental information based on the boundaries of ecosystems like watersheds, rather than on geopolitical boundaries

ecosystem-based management — an approach to making decisions based on the characteristics of the ecosystem in which a person or thing belongs [n.b. This concept considers interactions among the plants, animals, and physical characteristics of the environment in making decisions about land use or living resource issues.]

emergent wetland — wetlands dominated by erect, rooted, herbaceous plants

endangered species — a Federal- or State-listed protected species in danger of extinction throughout all or a significant portion of its range

endemic — a species or race native to a particular place and found only there

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 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 (q.v.) [cf. 40 CFR 1508.9]

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 [cf. 40 CFR 1508.11]

estuaries — deepwater tidal habitats and adjacent tidal wetlands that are usually semi-enclosed by land but have open, partly obstructed, or sporadic access to the ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from land

estuarine wetlands — “The Estuarine system consists of deepwater tidal habitats and adjacent tidal wetlands that are usually semi-enclosed by land but have open,

partly obstructed, or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land.”—Cowardin et al. 1979

exemplary community type — an outstanding example of a particular community type

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 (Wilson 1992)

extirpated — status of a species or population that has completely vanished from a given area but that continues to exist in some other location

exotic species — a species that is not native to an area and has been introduced intentionally or unintentionally by humans; not all exotics become successfully established

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 recently established by Congress.

fee-title acquisition — the acquisition of most or all of the rights to a tract of land; a total transfer of property rights with the formal conveyance of a title. While a fee-title acquisition involves most rights to a property, certain rights may be reserved or not purchased, including water rights, mineral rights, or use reservation (e.g., the ability to continue using the land for a specified time period, such as the remainder of the owner’s life).

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]

fire regime — the characteristic frequency, intensity, and spatial distribution of natural fires within a given ecoregion or habitat

fish passage project — providing a safe passage for fish around a barrier in the upstream or downstream direction

floodplain — flat or nearly flat land that may be submerged by floodwaters; a plain built up or in the process of being built up by stream deposition

focus areas — cf. “special focus areas”

forbs — flowering plants (excluding grasses, sedges, and rushes) that do not have a woody stem and die back to the ground at the end of the growing season

forest association — the community described by a group of dominant plant (tree) species occurring together, such as spruce-fir or northern hardwoods

forested land — land dominated by trees [For impacts analysis in CCP’s, we assume all forested land has the potential for occasional harvesting; we assume forested land owned by timber companies is harvested on a more intensive, regular schedule.]

forested wetlands — wetlands 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.

GAP analysis — the use of various remote sensing data sets to build overlaid sets of maps of various parameters (e.g., vegetation, soils, protected areas, species distributions) to identify spatial gaps in species protection and management programs

geographic information system — (GIS) a computerized system to compile, store, analyze and display geographically referenced information [e.g., GIS can overlay multiple sets of information on the distribution of a variety of biological and physical features.]

glade — an open space surrounded by forest

grant agreement — the legal instrument used when the principal purpose of the transaction is the transfer of money, property, services, or anything of value to a recipient in order to accomplish a public purpose of support or stimulation authorized by Federal statute and substantial

involvement between the Service and the recipient is *not* anticipated (cf. “cooperative agreement”)

grassland — a habitat type with landscapes dominated by grasses and with bio-diversity characterized by species with wide distributions, communities being relatively resilient to short-term disturbances but not to prolonged, intensive burning or grazing. In such systems, larger vertebrates, birds, and invertebrates display extensive movement to track seasonal or patchy resources

grassroots conservation organization — any group of concerned citizens who act together to address a conservation need

groundwater — water in the ground that is in the zone of saturation, from which wells and springs and groundwater runoff are supplied

guild — a group of organisms, not necessarily taxonomically related, that are ecologically similar in characteristics such as diet, behavior, or microhabitat preference, or with respect to their ecological role in general

habitat block — a landscape-level variable that assesses the number and extent of blocks of contiguous habitat, taking into account size requirements for populations and ecosystems to function naturally. It is measured here by a habitat-dependent and ecoregion size-dependent system

habitat fragmentation — the breaking up of a specific habitat into smaller, unconnected areas [n.b. 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 [n.b. An organism’s habitat must provide all of the basic requirements for life, and should be free of harmful contaminants.]

historic conditions — the composition, structure and functioning of ecosystems resulting from natural processes that we believe, based on sound professional judgement, were present prior to substantial human-related changes to the landscape

hydrologic or flow regime — characteristic fluctuations in river flows

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

important fish areas — the aquatic areas identified by private organizations, local, state, and federal agencies that meet the purposes of the Conte Act

impoundment — a body of water, such as a pond, confined by a dam, dike, floodgate, or other barrier, which is used to collect and store water for future use

indicator species — a species used as a gauge for the condition of a particular habitat, community, or ecosystem. A characteristic or surrogate species for a community or ecosystem

indigenous — native to an area

indigenous species — a species that, other than a result as an introduction, historically occurred or currently occurs in a particular ecosystem

informed consent — “the grudging willingness of opponents to go along with a course of action that they actually oppose.”—Bleiker

interjurisdictional fish — populations of fish that are managed by two or more States or national or tribal governments because of the scope of their geographic distributions or migrations

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 — 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.]

interpretive materials projects — any cooperative venture that combines financial and staff resources to design, develop, and use tools for increasing the awareness and understanding of events or things related to a refuge

introduced invasive species — non-native species that have been introduced into an area and, because of their aggressive growth and lack of natural predators, displace native species

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.] [n.b. A CCP should document, describe, and analyze issues even if they cannot be resolved during the planning process (FWS Manual 602 FW 1.4).]

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

keystone species — species that are critically important for maintaining ecological processes or the diversity of their ecosystems

lacustrine wetlands — “The Lacustrine system includes wetlands and deepwater habitats with all of the following characteristics: (1) situated in a topographic depression or a dammed river channel; (2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage; and (3) total area exceeds eight ha (20 acres).”—Cowardin et al. 1979

Land Protection Plan (LPP) — a document that identifies and prioritizes lands for potential Service acquisition from a willing seller, and also describes other methods of providing protection. Landowners within project boundaries will find this document, which is released with environmental assessments, most useful.

land trusts — organizations dedicated to conserving land by purchase, donation, or conservation easement from landowners

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

late-successional — species, assemblages, structures, and processes associated with mature natural communities that have not experienced significant disturbance for a long time

limiting factor — an environmental limitation that prevents further population growth

limits of acceptable change — a planning and management framework for establishing and maintaining acceptable and appropriate environmental and social conditions in recreation settings

local land — public land owned by local governments, including community or county parks or municipal watersheds

local agencies — generally, municipal governments, regional planning commissions, or conservation groups

long-term protection — mechanisms like fee title acquisition, conservation easements, or binding agreements with landowners that ensure land use and land management practices will remain compatible with maintaining species populations over the long term

macroinvertebrates — invertebrates large enough to be seen with the naked eye (e.g., most aquatic insects, snails, and amphipods)

management alternative — a set of objectives and the strategies needed to accomplish each objective [FWS Manual 602 FW 1.4]

management concern — cf. “issue” and “migratory nongame birds of management concern”

management opportunity — cf. “issue”

management plan — a plan that guides future land management practices on a tract [n.b. In the context of an environmental impact statement, management plans may be designed to produce additional wildlife habitat along with primary products like timber or agricultural crops (cf. “cooperative agreement”).]

management strategy — a general approach to meeting unit objectives [n.b. A strategy may be broad, or it may be detailed enough to guide implementation through specific actions, tasks, and projects (FWS Manual 602 FW 1.4).]

mesic soil — sandy-to-clay loams containing moisture-retentive organic matter, well drained (no standing matter)

migratory nongame birds of management concern — species of nongame birds that (a) are believed to have undergone significant population declines; (b) have small or restricted populations; or (c) are dependent upon restricted or vulnerable habitats

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.]

moraine — a mass or ridge of earth scraped up by ice and deposited at the edge or end of a glacier

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 (cf. 40 CFR 1500).]

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 American Tribe — see “Federal-recognized Native American Tribe.”

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

natural range of variation — a characteristic range of levels, intensities, and periodicities associated with disturbances, population levels, or frequency in undisturbed habitats or communities

Neotropical migrant — birds, bats, or invertebrates that seasonally migrate between the Nearctic and Neotropics

non-consumptive, wildlife-oriented recreation — wildlife observation and photography and environmental education and interpretation (cf. “wildlife-oriented recreation”)

non-native species — See “exotic species.”

non-point source pollution — a diffuse form of water quality degradation in which wastes are not released at one specific, identifiable point but from a number of points that are spread out and difficult to identify and control (Eckhardt 1998)

nonforested wetlands — wetlands dominated by shrubs or emergent vegetation

nonpoint source — a diffuse form of water quality degradation produced by erosion of land that causes sedimentation of streams, eutrophication from nutrients and pesticides used in agricultural and silvicultural practices, and acid rain resulting from burning fuels that contain sulfur (Lotspeich and Platts 1982)

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]

objective — cf. “unit objective”

obligate species — a species that must have access to a particular habitat type to persist

occurrence site — a discrete area where a population of a rare species lives or a rare plant community type grows

old fields — areas formerly cultivated or grazed, where woody vegetation has begun to invade [n.b. If left undisturbed, old fields will eventually succeed into forest. Many occur at sites marginally suitable for crops or pasture. They vary markedly in the Northeast, depending on soil and land use and management history.]

outdoor education project — any cooperative venture that combines financial and staff resources to develop outdoor education activities like labs, field trips, surveys, monitoring, or sampling

outdoor education — educational activities that take place in an outdoor setting

outwash plain — the plain formed by deposits from a stream or river originating from the melting of glacial ice that are distributed over a considerable area; generally coarser, heavier material is deposited nearer the ice and finer material carried further away

palustrine wetlands — “The Palustrine system includes all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0%.”—Cowardin et al. 1979

Partners for Wildlife Program — a voluntary, cooperative habitat restoration program among the Service, other government agencies, public and private organizations, and private landowners to improve and protect fish and wildlife habitat on private land while leaving it in private ownership

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 — cf. Revenue Sharing Act of 1935, Chapter One, Legal Context

pelagic — living in the water column, well above the bottom and some distance from land, as do oceanic fish or birds (contrast *demersal* and *benthic*)

phytoplankton — the ensemble of tiny plants that float or drift in marine waters. These tiny plants can produce such dense blooms in the Gulf of Maine that they turn our waters green. Phytoplankton are the base of the food chain on which ultimately most shellfish, fish, birds, and marine mammals depend (the exceptions being those that feed mostly on detritus from benthic plants). (See also *Zooplankton*.)

point source — a source of pollution that involves discharge of waste from an identifiable point, such as a smokestack or sewage-treatment plant (Eckhardt 1998)

population monitoring — assessing the characteristics of populations to ascertain their status and establish trends on their abundance, condition, distribution, or other characteristics

prescribed fire — the application of fire to wildland fuels, either by natural or intentional ignition, to achieve identified land use objectives [FWS Manual 621 FW 1.7]

priority general public use — a compatible wildlife-dependent recreational use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation

private land — land owned by a private individual or group or non-government organization

private landowner — cf. “private land”

private organization — any non-government organization

proposed wilderness — an area of the Refuge System that the Secretary of the Interior has recommended to the President for inclusion in the National Wilderness Preservation System

protection — mechanisms like fee title acquisition, conservation easements, or binding agreements with landowners that ensure land use and land management practices will remain compatible with maintaining species populations at a site (cf. “long-term ~”)

public — individuals, organizations, and non-government groups; officials of Federal, State, and local government agencies; Native American tribes, and foreign nations—includes anyone outside the core planning team, those who may or may not have indicated an interest in the issues, and those who do or do not realize that our decisions may affect them

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 involvement plan — long-term guidance for involving the public in the comprehensive planning process

public land — land owned by the local, State, or Federal Government

rare species — species identified for special management emphasis because of their uncommon occurrence within a watershed

rare community types — plant community types classified as rare by any State program; includes exemplary community types

recharge — refers to water entering an underground aquifer through faults, fractures, or direct absorption

recommended wilderness — areas studied and found suitable for wilderness designation by both the Director (FWS) and Secretary (DOI), and recommended by the President to Congress for inclusion in the National Wilderness System [FWS Manual 610 FW 1.5 (draft)]

Record of Decision — (ROD) a concise public record of a decision by a Federal agency pursuant to NEPA [n.b. A ROD includes:

- the decision;
- all the alternatives considered;
- the environmentally preferable alternative;
- a summary of monitoring and enforcement, where applicable, for any mitigation; and,
- whether all practical means have been adopted to avoid or minimize environmental harm from the alternative selected (or if not, why not).]

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 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

refuge lands — lands in which the Service holds full interest in fee title or partial interest like an easement

relatively intact — the conservation status category indicating the least possible disruption of ecosystem processes. Natural communities are largely intact, with species and ecosystem processes occurring within their natural ranges of variation.

relatively stable — the conservation status category between *vulnerable* and *relatively intact* in which extensive areas of intact habitat remain, but local species declines and disruptions of ecological processes have occurred

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.] See also “seabird restoration.”

restoration ecology — the process of using ecological principles and experience to return a degraded ecological system to its former or original state

riparian — referring to the interface between freshwater habitats and the terrestrial landscape

riparian agricultural land — agricultural land along a stream or river [n.b. We normally base our CCP analysis of impacts on an estimated 50' of land on both banks, unless otherwise stated.]

riparian forested land — forested land along a stream or river

riparian habitat — habitat along the banks of a stream or river [cf. note above]

riverine — within the active channel of a river or stream

riverine wetlands — generally, all the wetlands and deepwater habitats occurring within a freshwater river channel not dominated by trees, shrubs, or persistent emergents

runoff — water from rain, melted snow, or agricultural or landscape irrigation that flows over a land surface into a water body (cf. “urban runoff”)

sandplain grassland — dry grassland that has resisted succession due to fire, wind, grazing, mowing, or salt spray [n.b. Characterized by thin, acidic, nutrient-poor soils over deep sand deposits, sandplains primarily occur on the coast and off-coast islands, or inland, where glaciers or rivers have deposited sands.]

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

seabird restoration — the process of re-establishing populations of colonial nesting seabirds through a combination of predator control, both lethal and non-lethal, social attraction techniques, and other management actions. Objectives are to increase species diversity, population size, and the geographic distribution of colonies.

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, often with many grasses and forbs

site improvement — any activity that changes the condition of an existing site to better interpret events, places, or things related to a refuge [e.g., improving safety and access, replacing non-native with native plants, refurbishing footbridges and trailways, and renovating or expanding exhibits.]

source population — a population in a high-quality habitat where the birth rate greatly exceeds the death rate, and the excess individuals emigrate

special focus area — an area of high biological value [n.b. We normally direct most of our resources to SFA’s that were delineated because of:

1. the presence of Federal-listed endangered and threatened species, species at risk (formerly, “candidate species”), rare species, concentrations of migrating or wintering waterfowl, or shorebird stopover habitat;
2. their importance as migrant landbird stopover or breeding habitat;
3. the presence of unique or rare communities; or
4. the presence of important fish habitat.]

special habitats — wetlands, vernal pools, riparian habitat, and unfragmented rivers, forests and grasslands [n.b. Many rare species depend on specialized habitats that, in many cases, are being lost within a watershed.]

special riparian project — restoring, protecting, or enhancing an aquatic environment in a discrete riparian corridor within a special focus area

species assemblage — the combination of particular species that occur together in a specific location and have a reasonable opportunity to interact with one another

species at risk — a species being considered for Federal listing as threatened or endangered (formerly, a “candidate species”)

species of concern — species not Federal-listed as threatened or endangered, but about which we or our partners are concerned

species diversity — usually synonymous with “species richness,” but may also include the proportional distribution of species

species richness — a simple measure of species diversity calculated as the total number of species in a habitat or community (Fiedler and Jain 1992)

State agencies — natural resource agencies of State governments

State land — State-owned public land

State-listed species — cf. “Federal-listed 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]

stopover habitat — habitat where birds rest and feed during migration

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

sustainable development — the attempts to meet economic objectives in ways that do not degrade the underlying environmental support system. Note that there is considerable debate over the meaning of this term... we define it as “human activities conducted in a manner that respects the intrinsic value of the natural world, the role of the natural world in human well-being, and the need for humans to live on the income from nature’s capital rather than the capital itself.”

telecommunications — communicating via electronic technology

telecommunications project — any cooperative venture that combines financial and staff resources to develop and use computer-based applications for exchanging information about a watershed with others

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

tiering — incorporating by reference the general discussions of broad topics in environmental impact statements into narrower statements of environmental analysis by focusing on specific issues [40 CFR 1508.28]

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 [n.b. A Federal trust resource is one for which responsibility is given wholly or in part to the Federal Government by law or administrative act. Generally, Federal trust resources are nationally or internationally important no matter where they occur, like endangered species or migratory birds and fish that regularly move across state lines. They also include cultural resources protected by Federal historic preservation laws, and nationally important or threatened habitats, notably wetlands, navigable waters, and public lands like state parks and national wildlife refuges.]

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

unfragmented habitat — large, unbroken blocks of a particular type of habitat

unit objective — desired conditions that must be accomplished to achieve a desired outcome [n.b. Objectives are the basis for determining management strategies, monitoring refuge accomplishments, and measuring their success. Objectives should be attainable, time-specific, and stated quantitatively or qualitatively (FWS Manual 602 FW 1.4).]

upland — dry ground (i.e., other than wetlands)

upland meadow or pasture — upland pastures are areas maintained in grass for livestock grazing; upland meadows are hay production areas [n.b. Meadows may occur naturally in tidal marshes and inland flooded river valleys or, more frequently, at upland sites where vegetation has been cleared and grasses planted. Eventually, meadows will revert to old fields and forest if they are not mowed, grazed, or burned. Grasses in both managed meadows and pastures usually are similar, but pasture herbs often differ because of selective grazing.]

upwelling — a process whereby nutrient-rich waters from the ocean depths rise to the surface; it commonly occurs along continental coastlines

urban runoff — water from rain, melted snow, or landscape irrigation flowing from city streets and domestic or commercial properties that may carry pollutants into a sewer system or water body

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

warm-season grass — native prairie grass that grows the most during summer, when cool-season grasses are dormant

watchable wildlife — all wildlife is watchable [n.b. A watchable wildlife program is one that helps maintain viable populations of all native fish and wildlife species by building an active, well informed constituency for conservation. Watchable wildlife programs are tools for meeting wildlife conservation goals while at the same time fulfilling public demand for wildlife-dependent recreational activities (other than sport hunting, sport fishing, or trapping).]

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.

watershedwide education networks — systems for sharing educational information, like curriculum development projects, student activities, and ongoing data gathering; a combination of telecommunications and real-life exchanges of information

well protected — in CCP analysis, a rare species or community type is considered well protected if 75 percent or more of its occurrence sites are on dedicated open space

wet meadows — meadows located in moist, low-lying areas, often dominated by large colonies of reeds or grasses [n.b. Often they are created by collapsed beaver dams and exposed pond bottoms. 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.

“Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water.”— Cowardin et al 1979

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 (cf. “recommended wilderness”) [n.b. 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 man’s work substantially unnoticeable;
2. has outstanding opportunities for solitude or a primitive and unconfined type of recreation;
3. has at least 5,000 contiguous, roadless acres, or sufficient size to make practicable its preservation and use in an unimpaired condition. (FWS Manual 610 FW 1.5 (draft)).]

wilderness — cf. “designated wilderness”

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]

wildland fire — every wildland fire is either a wildfire or a prescribed fire [FWS Manual 621 FW 1.3]

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

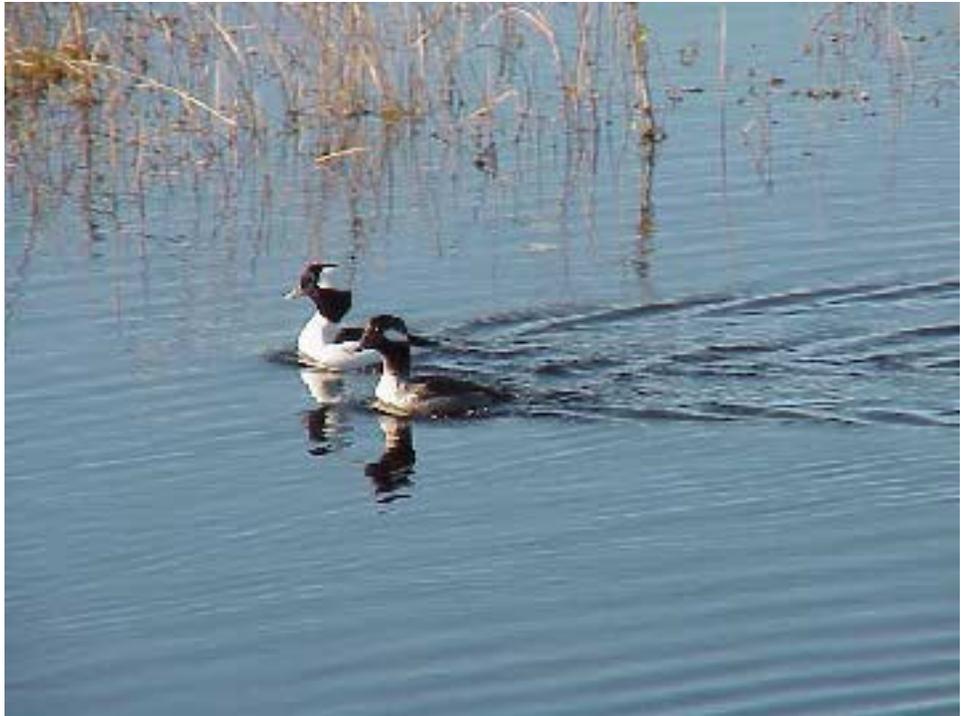
wildlife-oriented recreation — recreational activities in which wildlife is the focus of the experience [“The terms ‘wildlife-dependent recreation’ and ‘wildlife-dependent recreational use’ mean a use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation.”— National Wildlife Refuge System Improvement Act of 1997]

working landscape — the rural landscape created and used by traditional laborers [n.b. Agriculture, forestry, and fishing all contribute to the working landscape of a watershed (e.g., keeping fields open by mowing or by grazing livestock).]

LIST OF ACRONYMS

ACOE — Army Corps of Engineers	MDOT — Maine Department of Transportation
ADA — Americans with Disabilities Act	MITA — Maine Island Trail Association
ANP — Acadia National Park	MMS — Management Maintenance System
ARPA — Archaeological Resources Protection Act	MOA — Memorandum of Agreement
ATV — all-terrain vehicle	MOU — Memorandum of Understanding
BBS — Breeding Bird Survey	NAP — Natural Areas Program
BCR — bird conservation region	NAS — National Audubon Society
BMP — best management practices	NAWCP — North American Waterbird Conservation Plan
CCP — Comprehensive Conservation Plan	NAWMP — North American Waterfowl Management Plan
CIREG — Coastal Island Registry number	NEPA — National Environmental Policy Act
CWS — Canadian Wildlife Service	NHPA — National Historic Preservation Act
DMR — Department of Marine Resources	NMFS — National Marine Fisheries Service
DEP — Department of Environmental Protection	NPS — National Park Service
EA — Environmental Assessment	NRCS — Natural Resources Conservation Service
EIS — Environmental Impact Statement	NRPA — Natural Resource Protection Act
EPA — Environmental Protection Agency	NWPS — National Wilderness Preservation System
FAA — Federal Aeronautics Administration	NWR — National Wildlife Refuge
FONSI — Finding of No Significant Impact	PID — Project Information Document
FY — Fiscal Year	PIF — Partners in Flight
GIS — Geographic Information System	PMNWR — Petit Manan National Wildlife Refuge
GOMP — Gulf of Maine Program	RONs — Refuge Operations Needs System
GOMSWG — Gulf of Maine Seabird Working Group	RRP — Refuge Roads Program
GPS — Geographic Positioning System	RRS — Refuge Revenue Sharing
HIOBS — Hurricane Island Outward Bound School	SMART Objectives — Specific, Measurable, Achievable, Results-oriented, Time-fixed
HMP — Habitat Management Plan	TNC — The Nature Conservancy
HSIMP — Habitat and Species Inventory and Monitoring Plan	UNB — University of New Brunswick
LE — Law Enforcement	USCG — U.S. Coast Guard
LPP — Land Protection Plan	USDI — U.S. Department of the Interior
LWCF — Land and Water Conservation Fund	USFWS — U.S. Fish and Wildlife Service
MAPS — Monitoring Avian Productivity and Survivorship	USGS — U.S. Geological Survey
MCHT — Maine Coast Heritage Trust	WSA — wilderness study area
MDIFW — Maine Department of Inland Fisheries & Wildlife	

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Buffleheads
USFWS photo

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