



*Fireweed*  
USFWS photo

## Alternatives, Including the Service's Preferred Alternative

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## Introduction

This chapter presents:

- our process for formulating alternatives;
- actions that are common to all alternatives;
- actions or alternatives considered but not fully developed; and,
- descriptions of the four alternatives we analyzed in detail.

At the end of the chapter, you will find a tabular matrix that compares and contrasts specific management actions and strategies by alternative (Table 2-1). We organized this table to show how the actions and strategies address the significant issues identified in Chapter 1.

## Formulating Alternatives

### Relationship of Goals and Objectives to Formulating Alternatives

Goals and objectives define each alternative. As we described in Chapter 1, 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. The goals are common to all alternatives.

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. They often vary between the alternatives. 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 selected for the final CCP will be used directly in respective Refuge step-down plans, including the Habitat Management and Visitor Services plans. Our successes will be based on how well we achieve our objectives.

We also developed strategies for each objective. Strategies are specific actions, tools, techniques, considerations, or a combination of these, which may be used to achieve the objectives. Some of the strategies may be revised in the process of developing step-down plans, but most strategies will likely be carried forth directly into subsequent plans.

**Alternatives, including  
the No Action  
Alternative**

After identifying a wide range of possible management objectives and strategies, we began the process of creating alternatives. Simply put, alternatives are packages of complementary management objectives for achieving the Service and Refuge System missions, refuge establishment purposes, and Refuge vision and goals, while also responding to issues and opportunities identified during the planning process.

To this end, we grouped various objectives that seemed to fit together in what we loosely called “themes.” For example, we considered themes like “custodial management” or “habitat restoration emphasis,” or “land protection emphasis.” These themes were then firmed up into four alternatives after further evaluating how respective objectives would interact, their compatibility with the refuge purposes, and the reality of accomplishing each during the next 15 years. We believe the four alternatives, with their respective objectives, represent a reasonable range of proposals for achieving the Refuge’s purposes, vision, and goals, and for addressing the significant issues identified in Chapter 1.

NEPA requires analysis of a “No Action” alternative, which can be defined as continuing with current management. In this final EIS, Alternative A fulfills this definition; it continues our current and approved management activities. We refer to Alternative A throughout this document as our “Current Management Alternative.” It provides the baseline for comparing and contrasting the other three action alternatives. In fact, we suggest reading Chapter 3: Affected Environment first for detailed descriptions of current Refuge resources.

You will notice that objectives in Alternative A do not strictly adhere to the SMART format because we are describing management activities that were already established on the Refuge before the 2003 handbook guidance. We felt it would falsely portray current management to manipulate them into this format. As such, Alternative A objectives are more subjective in nature than Alternatives B, C and D.

Unless otherwise noted, all actions would be implemented by Refuge staff.

### **Actions Common to All Alternatives**

There are some major actions that will be implemented regardless of the alternative selected. These are actions which:

- may be required by law or policy;
- represent NEPA decisions that have recently gone through a public and agency review;
- are administrative actions that do not necessarily require public review but we wanted to highlight them in this document; or,
- are considered so fundamentally important to achieving Refuge purposes and goals, we determined they should occur regardless of the alternative.

### **Refuge Step-down Plans**

All of the alternatives incorporate the completed EAs, management plans, and step-down plans listed below. Some of the alternatives may build on these documents, but do not fundamentally change their original decisions.

- Fire Management Plan and EA, 2002 (includes wildfires and prescribed management fires)
- Safety Program and Operations Plan, 2000
- Continuity of Operations Plan, 1999
- Hunt Plan and EA, 2001

We will complete the following step-down plans, which are necessary components of implementing the selected alternative (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 4 years of CCP approval
- Compatibility Determinations for Wildlife-Dependent Recreational Uses (Appendix C)
- Land Protection Plan (Appendix A)
- 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, regardless of the alternative. 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 once a final CCP is approved.

**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, regardless of the alternative. 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**

Developing a land protection strategy for each alternative was one of the most time-consuming and complicated aspects of this Final EIS. All alternatives include, at a minimum, continued Service acquisition of lands from willing sellers within the currently approved Refuge boundary. At present, we have approval to acquire 467.1 acres consisting of 2 tracts (24.6 acres) on Petit Manan Point Division; 1 tract (95 acres) on the Sawyers Marsh Division; and 21 tracts on 14 islands (347 acres). We believe Service acquisition of these lands are 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. Table 1 in Appendix A: Land Protection Plan summarizes these lands. While all the alternatives include these 467.1 acres, the alternatives differ in how much additional land is proposed for Service acquisition from willing sellers. All lands acquired would become part of the Petit Manan Refuge.

In addition to Service acquisition, all alternatives would allow us to 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.

**Invasive and Exotic Plant Management**

Managing to control 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. All alternatives would provide for active management to control their presence and spread, although they differ in whether to allow all treatments available to us including, mechanical, chemical, biological, fire, or 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 1 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. This partnership would continue under all alternatives.

**Native American Coordination**

Improving our relationship with the Passamaquoddy and other Wabanaki Tribes is common to all alternatives. 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**

All alternatives include developing a Memorandum of Understanding (MOU) with the U.S. Coast Guard within 2 years of CCP approval. This MOU would 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. Under all of the alternatives, 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. All alternatives also include completing a Cultural Resources Management and Protection Plan within 4 years of CCP approval.

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. While all alternatives would include maintenance to minimum historic preservation standards, the alternatives differ in how we would pursue further enhancements, and promote public use and enjoyment of these resources.

As noted above under land protection, all alternatives include additional land acquisition. However, regardless of the alternative, we are not purposefully seeking to acquire any more lighthouses or associated 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. In all alternatives, the water control structures would 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. While all alternatives would maintain the water control structures, the alternatives vary in the amount of active management these wetlands would receive.

**Refuge Revenue Sharing Payments**

Annual refuge revenue sharing payments to the 20 Maine coastal towns in which Refuge lands are located will continue under each alternative. 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.

**Partnerships**

All alternatives 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, but we will also pursue new ones of mutual interest and benefit to Refuge goals and objectives.

**Friends Group Support**

All alternatives would 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 management and island protection program and the proposed coastal education center. We anticipate this group will provide us with valuable assistance in imple-

menting our final CCP. Similarly, all alternatives would seek opportunities to create a second Refuge Friends Group in downeast Maine.

**Volunteer Opportunities**

All alternatives would 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.

**Existing Facilities Maintenance**

Periodic maintenance and renovation of existing facilities is a critical need, regardless of the alternative finally selected, to ensure safety and accessibility for Refuge staff and visitors. Besides the historic lighthouses, dwellings, and outbuildings noted above under cultural resources, we would continue to maintain the following structures in all alternatives:

- 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 trails, should be upgraded to be compliant with the Americans With Disabilities Act (ADA). Appendix E displays the fiscal year (FY) 2003 Maintenance Management System (MMS) database list of backlogged maintenance entries for the Refuge.



*Milbridge, Maine office, current Refuge Headquarters*  
USFWS photo

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; however, future maintenance will be necessary within the 15 year planning horizon.

Future maintenance needs would vary among the alternatives, since they differ in the amount of new facility construction. Appendix E also lists new construction projects identified in our Refuge Operations Needs Systems (RONS) database.

Funds for refuge public use roads, parking lots, bridges, restrooms, and trails would be sought from the Refuge Roads Program (RRP), a

Federal Lands Highway Program the Service created in TEA-21. These funds can also be used for interpretive enhancements associated with these project, 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.

**Refuge Headquarters and Coastal Education Center**

All alternatives would allow us to pursue the idea of a new Refuge Headquarters and Coastal Education Center in the mid-coast area. We would continue to work with our partners, including National Audubon Society, Maine Audubon Society, the Friends Group, and MDIFW to establish a vision, agree on purpose and 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. In Chapter 3, under our discussion on Refuge administration, we present some tentative criteria for selecting a site. We expect to expand on these criteria as discussions with our partners continue. 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**

All alternatives would allow us to continue to provide technical assistance to landowners interested in enhancing or protecting their lands for wildlife. We heard from many people that this is an important community service provided by the Refuge staff that should continue. Several of our strategies identify specific activities we plan to undertake to facilitate this assistance.

**Permitting Special Uses (including Research and Commercial Activities)**

Under all alternatives, 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 all alternatives. 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, Part 4, Chapter 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 management projects.

**Refuge Complex Name Change**

Through our outreach efforts, we have determined the need to change the name we use to refer to the 5-refuge complex. We will change it to “Maine Coastal Islands National Wildlife Refuge” to better reflect the current mission and geographic scope of our management. We will use this name in outreach and administration, only to refer to the five refuges collectively. It does not change the name or status of the individual refuge units.

**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 the four alternatives are described in enough detail 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 management 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**

Common to all alternatives is 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 or research to recon-

sider 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.



Wood duck pair  
USFWS photo

**Alternatives or Actions Considered But Not Fully Developed**

**No Service Land Acquisition**

We considered an alternative that has no additional Service land acquisition including forgoing acquisition of those tracts within our currently approved Refuge boundary. However, we quickly came to the conclusion that this alternative would compromise our ability to achieve our Refuge goals and individual refuge purposes. As we noted above under the land protection discussion, it is important that, at a minimum, we acquire the private lands within our currently approved boundary. These lands are important for their Federal trust resource values and would provide us with more effective management boundaries. Further, their potential development would adversely impact resources on adjacent refuge lands. Finally, we recognized that no individual, agency, organization, or elected official has recommended this alternative to us. As such, we felt it was not warranted to develop this alternative in detail.

**Description of Individual Alternatives Analyzed in Detail**

The four alternatives analyzed in detail are each presented below. We provide an overview description of each one, and then present their respective goals, objectives, and strategies. Maps depicting our proposed public use programs and infrastructure are presented after each alternative's discussion.

Following these descriptions, Table 2-1 provides a side-by-side comparison of how the alternatives address the significant issues identified in Chapter 1. It is designed to provide a quick overview of the principal Federal actions we propose to undertake, and those actions that distinguish the alternatives.

Table 2-2 indicates which of the 151 nationally significant islands are included in the Refuge expansion proposals for Alternatives A, B and C. Alternative D does not include an expansion proposal. Table 2-3 summarizes the land acquisition proposals by alternative.

The environmental consequences of implementing the actions proposed in the alternatives are described in detail in Chapter 4.

**Alternative A: Current Management**

**Introduction**

This alternative portrays current, planned and approved management activities and serves as a baseline against which all other alternatives are compared. Projects planned, funded, and/or underway are described in this alternative. The biological program priorities would continue to be the six seabird management projects on Refuge islands. These projects include vegetation management to maintain high quality nesting habitat and hiring seasonal crews to staff the management sites throughout the nesting season. On the mainland, we would continue the 70 acres of open field management, maintain the 3 freshwater impoundments, and continue the Monitoring Avian Productivity and Survivorship (MAPS) station monitoring. In addition, we would continue to conduct baseline biological inventories on both the mainland and islands as funding and staffing allows.

We would continue our annual hunt program, begun in 2002, which allows waterfowl hunting on 22 islands, deer hunting on Bois Bubert Island, and small game, big game, and waterfowl hunting on the Sawyers Marsh and Gouldsboro Bay divisions. No fishing opportunities exist on the Refuge, so no program has been developed. Other existing priority public use programs would continue, primarily the wildlife observation, nature photography, and environmental interpretation on Petit Manan Point Division's two trails: Birch Point and John Hollingsworth Memorial trails. Our expectation is that we would see approximately a 10% increase in annual visitation based on recent local trends; however, increasing visitation on the Refuge is not an objective of this alternative.

We would continue to pursue Service acquisition from willing sellers of the 467.1 private acres within our approved boundary. We would also pursue a new expansion proposal of 30 islands (881 acres; see Table 2-2) and 153 acres of mainland in two tracts. The islands all support Federal trust resources such as nesting seabird sites and important migratory bird habitats. The larger, 150 acre mainland tract is a very important coastal shorebird concentration area during migration and would be acquired under a no-cost transfer from the U.S. Navy. This expansion proposal is based on what we could reasonably expect to acquire if the recent annual land acquisition funding continued over the next 15 years and willing sellers are available. Maps 2-1 to 2-4 (pages 2-39 to 2-42) depict our existing and planned use infrastructure on the four mainland divisions.

No new infrastructure would be developed for any of our programs, but we would continue to maintain the facilities we identify in Chapter 3. Alternative A would maintain the current staffing level; that is, six permanent employees (see Appendix F).

Although we conducted a wilderness inventory (Appendix D) and concluded that 13 islands met the minimum qualifications for wilderness, under this alternative we would not propose that any be recommended for inclusion in the National Wilderness Preservation System. Designation would require additional staff time and resources to plan and manage these islands to maintain their wilderness character, which we would not be prepared for under this alternative.



*Banding birds at the MAPS Station on Petit Manan Point Division*  
USFWS photo

The current status of Refuge resources, programs, staffing and infrastructure is described in more detail in Chapter 3: Affected Environment.

As we mentioned above in the section on formulating alternatives, the objectives in Alternative A do not adhere to the SMART format because our current programs were not designed within this planning framework. As such, you will notice that Alternative A objectives are fewer and more subjective in nature than Alternatives B, C, and D. However, we list Alternative A objectives in approximately the same subject-area sequence as Alternatives B, C, and D.

**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)**

Maintain the 70 acres of open field on Petit Manan Point to provide habitat diversity for nesting and migrating land birds.

*Background:* Five years of data from the Monitoring Avian Productivity and Survivorship (MAPS) station on Petit Manan Point have indicated an incredible diversity of land bird species nest here. MAPS is a continent-wide program, with over 500 stations, designed to determine Neotropical land bird survival and productivity rates. The overall goal is to establish the factors most affecting population fluctuations. The MAPS station on Petit Manan Point is in the top 5% nationally, excepting Alaska, with regards to species richness and productivity. We have attributed this success, in part, to the diversity of cover types in the area, which in turn, offer a wide variety of nesting and foraging habitat, and protective cover. We assume other factors attracting birds to Petit Manan Point are its proximity to the shoreline, a major bird travel corridor, and the availability of freshwater. Our observations also indicate that this cover type on the Petit Manan Point is heavily utilized during fall land bird migrations, probably for the same reasons it is important nesting habitat.

As such, our management strategy has been to burn, mow, or otherwise mechanically treat, vegetation on a 3-5 year rotation, when funding, staffing, and prescribed burn conditions allow. More details on our current management are provided in Chapter 3: Affected Environment.

*Strategies:*

- continue MAPS and Regional land bird surveys according to their respective protocols to determine nesting land bird response to habitat management. Conduct respective surveys as often as needed to establish trend information. Incorporate data into GIS database.
- continue annual woodcock surveys on Petit Manan Point.
- continue to mechanically treat and/or prescribe burn open fields; prescribed burn generally on a three-to-five-year rotation in the 11 burn units according to annual burn plan. Up to 55 acres may be prescribed burned in any given year.

**Objective 1.2 (Rare Plants)**

Monitor the rare plant communities on Petit Manan Point to ensure they are not being adversely impacted by human or wildlife activities.

*Background:* On Petit Manan Point, 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*), and moonwort (*Botrychium lunaria*; see Appendix B for TNC and Maine Natural Area ranking of each species). All five species of plants are considered imper-

iled in Maine because of their rarity or vulnerability to further decline. The Nova Scotia false-foxglove is also thought to be imperiled globally. To date these populations have been located and mapped.

There is a pending land transfer of the 400 acre Corea Heath from the U.S. Navy to the Service. This tract is unique ecologically and botanically and was designated an “Ecological Preserve” by the Navy. Once this tract is acquired by the Service, our intent is to map and monitor the rare plant community similar to Petit Manan Point.

Strategies:

- continue to locate rare plants when staff or volunteer resources allow; maintain locations in GIS database.
- visit the rare plants sites at least once every three years to document impacts from humans, invasive plants, and wildlife, namely deer.
- treat invasive plants threatening rare plant populations using hand, mechanical, chemical, or prescribed fire as warranted.

**Goal 2: Maintain High Quality Wetland Habitat of 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 Refuge’s Mainland Coast**

Monitor saltmarsh and estuary areas to ensure they are not being lost or degraded by human-caused activities such as trampling, adjacent construction or developments, and pollution.

*Background:* Saltmarsh and estuaries are perhaps the most productive areas on the Refuge. They support more species than any other cover type, when you consider the number of vertebrate and invertebrate species that forage, nest, spawn, migrate through, or use them as nurseries. Numerous Federal trust resources, such as land birds, waterfowl, and shorebirds, rely on this habitat type for either nesting or migration. They also filter nutrients, waste, and sediment from upland runoff.

These areas provide immensely valuable functions in the coastal ecosystem.

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 monitor these areas for degradation; observe for signs of trampling, adjacent construction or developments, and pollution.



*Saltmarsh on Gouldsboro Bay Division*  
USFWS photo

- continue to conduct land bird and marshbird surveys according to Regional protocol.
- continue to cooperate with MDIFW, Acadia NP, and private researchers to conduct winter shorebird surveys to document trends and better understand how these birds may be using these areas.

### **Objective 2.2 (Freshwater Impoundments)**

Maintain the three existing freshwater impoundments on Petit Manan Point (i.e. Meadow Brook, Mague Flowage, and Cranberry) to continue to provide 112 acres of freshwater habitat for migrating waterfowl, shorebirds and waterbirds.

*Background:* The upper two earthen dike impoundments (Mague and Meadow Brook) were created in 1990 and the lower Cranberry impoundment was created in 1993 to trap and hold groundwater flow. While the amount of water can be much less during dry summers, up to 112 acres occurs in the fall as ponded freshwater. This freshwater, combined with the wild rice forage in Cranberry Flowage and the proximity to the shoreline, make these ponds exceptional fall migratory bird resting and foraging habitat. Of particular note is the thousands of black ducks that migrate through these impoundments. Black ducks are a Federal trust species of concern throughout their range. While not as numerous, shorebirds and waterbirds of conservation concern also benefit. In the past we have monitored the amount and distribution of wild rice and estimated waterfowl numbers during peak season, but have not been able to accomplish this with current staffing levels.

*Strategies:*

- continue to maintain the earthen dikes and culverts each season.
- continue annual water bird surveys according to Regional protocol.

### **Objective 2.3 (Vernal Pool Wetlands)**

Protect vernal pool wetlands to insure no net loss or degradation of this important ecological community.

*Background:* Vernal pools are temporary wetlands that provide crucial habitat to several vertebrate and many invertebrate species. They are especially valuable to these species because they have no predatory fish. Typically small and quite shallow, they can be found in many areas where small depressions collect spring runoff or snowmelt or intercept seasonally high groundwater tables. Because they are small and often isolated from other wetlands they are often overlooked when development is planned. As such, the decline of this habitat has been very dramatic, as has been the decline of certain species dependent on them.



Pickerel frog  
USFWS photo

For example, several of the amphibians of concern to the Refuge depend on vernal pool habitat during all or part of their life cycle. Unfortunately, this habitat type is not fully mapped on Refuge lands nor have known sites been intensively surveyed to document the presence of amphibians during the breeding season. Successive surveys will be necessary to locate vernal pools and evaluate the effects of our management actions on amphibian species diversity and abundance.

We are also interested in amphibian populations because they serve as excellent indicators of environmental health (Heyer et. al. 1994). Their

physiological traits (e.g. permeable skin) and ecological traits (e.g. complex, two-phase life cycle), make them 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; Klemens 1993).

*Strategies:*

- continue to locate and map vernal pool habitats in the GIS database; participate in the Regional vernal pool study if protocol criteria can be met.
- continue to conduct annual anuran call count surveys according to Regional protocol.

**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)**

Protect from human impacts the four active and four historic bald eagle nesting sites.

*Background:* Bald eagles are listed as threatened by both the Federal government and the State of Maine. When they were initially listed, the 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; however, habitat loss and human disturbance continue to be issues. Over the past 20 years, the bald eagle population in Maine has responded to this protection, and the State now supports over 295 pairs of eagles. However, MDIFW has identified permanent protection of at least 150 eagle nesting sites as a requirement for de-listing the species.

Bald eagles are actively nesting on the Refuge 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 successfully nested in large hardwood trees that are dominant in the tree canopy. During the nesting season eagles are sensitive to disturbance and will typically nest in areas with minimal human activity. 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 support MDIFW's annual efforts to monitor occupancy and productivity at all bald eagle nest sites in the State; compare reproductive rates of eagles nesting within the Refuge to statewide averages; if possible, determine causes of decreased productivity and evaluate whether management actions are warranted.
- continue to acquire mainland and island habitat with active or suitable bald eagle nesting habitat within approved Refuge boundaries. Any additional bald eagle nest sites acquired in the future by the Service would receive the same level of protection as current Refuge lands.



*Bald eagle and nest*  
MDIFW photo

### Objective 3.2 (Migratory Land Birds)

Monitor land bird use of coastal islands, documenting species, habitat preferences, seasonality, and relative numbers to develop a base of knowledge for making informed management decisions.

*Background:* Recent information indicates that coastal islands play a key role in providing Neotropical migratory songbirds and raptors with the optimal variety of foraging items which are necessary to complete their migration (R. Suomala pers. comm.). Studies have revealed that migrating songbirds are severely dehydrated and they seek forage such as berries to obtain lifesaving water. Interestingly, many birds that are normally omnivorous will forage exclusively on berries during migration (Parrish 1999).

Seabird researchers working on coastal islands have documented significant numbers and species of migrants using the islands during spring migration. Unfortunately, Refuge specific information is not available for the fall bird migration. However, based on a limited study we contracted,

preliminary results indicated that a considerable number of raptors utilize offshore islands as foraging areas during their fall migrations (Drury and Goodhue 1998). Additional surveys are planned which will hopefully provide us with more information.

*Strategies:*

- continue to have seasonal researchers on seabird management islands document nesting and migrating land birds in conjunction with their seabird work.

### **Objective 3.3 (Baseline Biological Inventories)**

Conduct baseline biological inventories on islands within the Refuge to build a knowledge base for more informed decision-making.

*Background:* Beginning in 1999, we initiated a protocol to conduct baseline vegetation and wildlife inventories on at least two Refuge islands per year. Our efforts will continue until all Refuge islands have been inventoried, and then the survey process will start again. The protocol is designed to insure that we specifically identify and map those species and plant communities of management concern (Appendix B), as well as other native species to provide us with information to develop strategies to protect and manage native biological diversity and integrity.

*Strategies:*

- continue baseline biological inventories on at least 2 islands/year; maintain a GIS database with survey information.
- continue to allow research that contributes to our baseline biological inventory database. Spider, small mammal, beetle, dragonfly and damselfly surveys are examples.

### **Objective 3.4 (Rare Plants)**

Protect or enhance existing populations of rare plants to ensure they remain viable and contribute to the natural botanical diversity of the island.

*Background:* Included in the inventory in Objective 3.3 is the identification of rare plant sites. Several sites are already known to us. Our best example is Halifax Island where the following rare and fragile communities have been documented: maritime slope bog, dwarf shrub bog, moss lawn bog plateau, bog lawn, bog pond, and acidic fen (Famous and Spencer-Famous 1999). We are protecting these sites by closing 3/4 of Halifax Island to public access to avoid trampling. On a few other islands, we are monitoring invasive plants to ensure they do not threaten rare plants or native biodiversity, and only when necessary, will control their spread through hand, mechanical, chemical, or prescribed fire treatments.



Portions of Halifax Island are closed to public access to protect rare plants  
USFWS photo

*Strategies:*

- continue to maintain year round access closure on 3/4 of Halifax Island.
- continue to conduct baseline biological inventories as identified in objective 3.3 on at least 2 islands/year; including identifying and mapping in GIS rare plants sites.
- continue to treat invasive plants only when they threaten rare plant populations using hand, mechanical, chemical, or prescribed fire treatments as warranted.

**Goal 4: Protect the High Quality Wetland Habitats on the Refuge’s Coastal Islands to Benefit Nesting and Migratory Shorebirds and Waterfowl**

**Objective 4.1 (Coastal Saltmarsh - Cross Island)**

Monitor the saltmarsh on Cross Island to ensure it is not being lost or degraded by human-caused activities such as trampling, adjacent development, or pollution.

*Background:* As noted in Objective 2.1, coastal salt marsh areas provide immensely valuable functions in the coastal ecosystem supporting an incredible diversity of vertebrate and invertebrate life.

*Strategies:*

- continue to monitor these areas for degradation; monitor for signs of trampling, adjacent construction or developments, and pollution.

**Objective 4.2 (Intertidal Harvesting)**

Monitor intertidal harvesting activities to insure they do not impact nesting birds.

*Background:* The intertidal area adjacent to many coastal islands is rich in aquatic resources that are harvested for both commercial and recreation uses. Some of these resources include blue mussels, blood worms, and periwinkles. Our concern is the loss of this forage base for waterfowl, shorebirds, and aquatic life, and that the harvest activity often occurs during the sensitive seabird nesting season. We have frequently observed that harvesters land their boat on the island accompanied by dogs who roam freely on the island. We have observed seabirds, who are nesting just inland above high tide line, flush from their nest repeatedly with the presence of harvesters who often stay in an area for hours.

*Strategies:*

- continue to monitor and document intertidal harvesting activities in conjunction with seabird management projects; note numbers, timing and what they are harvesting.
- continue to enforce public access closures during the seabird nesting season.

**Objective 4.3 (Fall and Winter Shorebird Use)**

Monitor fall migration and winter shorebird use to determine whether there are concentration areas that should be protected and/or managed.

*Background:* It is well documented that coastal islands provide important resting and stopover habitat for fall migrating shorebirds. Shorebirds migrate some of the longest distances of any bird group. During migration, they seek out certain wetlands where they can feed intensively on adult and larval invertebrates to replace depleted energy reserves and to provide fuel for the ensuing long-distance flights. The mudflats, rocky and sandy intertidal areas are ideal foraging habitat for many migrating shorebirds, as well as winter residents. Coastal islands are also ideal since they are generally free from mainland predators and human disturbance. Of particular interest to us is the potential use of Refuge islands by migrating piping plover, a Federal-listed threatened species. A few occurrences of this species have been noted during migration.

*Strategies:*

- continue to monitor fall shorebird migrations as volunteer assistance or research opportunities become available; map and incorporate data into GIS database.
- continue to cooperate with MDIFW, Acadia NP, and private researchers to conduct winter shorebird surveys along the coast.

**Goal 5: Protect and Manage Nesting Seabird Populations on Refuge Coastal Islands to Contribute to Regional and International Seabird Conservation Goals**

**Seabird Nesting Islands with Active Management****Objective 5.1 (Common and Arctic Tern)**

Contribute to the Gulf of Maine Seabird Working Group goal of restoring well-distributed populations of common and Arctic tern to coastal islands.

*Background:* In cooperation with other Gulf of Maine Seabird Working Group (GOMSWG) partners, we are contributing to the significant progress of restoring these terns to their historic population levels by managing for their colonies on Refuge islands. An additional objective we are working towards is to improve the geographic distribution of these nesting colonies in the Gulf of Maine.

Arctic terns are currently State-listed as threatened; common tern are State-listed as species of special management concern. Over the last 19 years of management and restoration work, the common tern population has increased from about 2,500 to 5,936 pairs. Arctic terns have increased from 1,720 pairs to 2,975 pairs. This represents a population growth in Maine of 72% for Arctic tern, and 137% for common tern. An additional 3,551 pairs of common and Arctic terns nest on Machias Seal Island. At present, approximately 90% of the entire Gulf of Maine population of common and Arctic terns are nesting on the ten managed seabird islands in Maine; six of these are on the Refuge. In fact, most of the Arctic terns in Maine only nest on three Refuge islands: Petit Manan, Matinicus Rock, and Seal islands. In 2001, only five pairs of Arctic terns in the lower 48 states nested outside of Maine (NAS 2001). Therefore, the recovery of the Arctic tern population along the eastern United States is dependent on the status of the Maine population. Their limited distribution and the fact they frequently experience lower productivity levels (NAS 2001), make them a particular concern to us.

The potential is great that a single catastrophic event (e.g. oil spill, disease, predator) could significantly reduce these tern populations in the Gulf of Maine since they are few in number and concentrated on so few islands.

As such, GOMSWG members are working hard to cooperatively increase the geographic distribution of managed colonies to minimize this threat.



*Arctic tern in flight*  
USFWS photo

Our work with common and Arctic tern on Refuge islands is focused on predator management, vegetation management, and restricting public access to insure we continue to enhance suitable nesting habitat. We maintain seasonal staff on these islands throughout the nesting season. Staff monitor nesting pairs, their productivity, predator activities, public use in the intertidal zone, and tour boat activities. Please refer to Chapter 3 for a more detailed discussion of our predator management and vegetation treatments.

In addition to our seabird projects on six Refuge islands, we would contribute to this objective with our proposal to acquire and manage an additional 30 islands with active seabird nesting (See Goal 7). We would also continue to cooperate with NAS in ongoing management efforts on four other seabird islands under other ownerships.

*Strategies:*

- continue cooperation with NAS, MDIF&W, Canadian Wildlife Service and other seabird partners; 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 and initiate steps to minimize these factors.
- continue to actively manage predator populations on seabird islands 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.
- in cooperation with NAS, 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 procedures” while operating near seabird nesting islands.
- continue to participate in cooperative efforts (University of New Brunswick, NAS, and USFWS) to study the Arctic tern metapopulation within the Gulf of Maine.
- continue to annually close seabird nesting islands to public visitation between April 1 and August 31.
- continue working with Federal Aeronautics Administration (FAA) to have Refuge islands identified on FAA flight charts so that pilots are alerted to the 2,000 ft.-minimum recommended altitude over a national wildlife refuge.
- continue to work with partners to monitor aquaculture facilities near nationally significant nesting islands to determine if aquaculture operations are disturbing nesting birds.
- continue to acquire seabird nesting islands within the approved Refuge acquisition boundary

### **Objective 5.2 (Roseate Tern)**

Contribute to the recovery of roseate tern by increasing the number and productivity of nesting pairs through the protection and management of nesting sites.

*Background:* The roseate tern is Federal- and State-listed as endangered. 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). The roseate tern saw a population growth rate of 276% over the past 15 years, faring better than the common and Arctic tern populations noted above. While their growth rate is impressive, 95% of the 285 pairs of roseate terns in Maine nest on just two islands (Eastern Egg Rock and Stratton).

Our management efforts on Refuge islands include the use of artificial nest boxes, predator management, and restricted public access to ensure we continue to provide habitat which is suitable for nesting roseate terns.

Continued monitoring efforts by the island research crews will enhance our knowledge of roseate terns by providing site specific reproductive data, diet composition, and habitat use for each island. Should limiting factors be identified, measures would be taken to alleviate or minimize the situation. The research crew would continue to be responsible for daily predator control as necessary. Managing predators is critical to the contin-



Roseate tern  
USFWS photo

ued survival of the colonies. In an effort to minimize human disturbance during the nesting season, we would continue to close seabird nesting islands to public visitation between April 1 - August 31. We would continue to strive for increased numbers of nesting pairs and a productivity rate of 1.0 chick/pair.

In addition to our management projects on six Refuge islands, we would contribute to this objective with our proposal to acquire and manage an additional 30 islands with active seabird nesting (See Goal 7). Three of these islands are historic roseate tern nesting sites, and others would provide potential future nesting sites.

#### *Strategies:*

- continue cooperation with National Audubon Society to annually census islands for nesting roseate terns; conduct productivity studies to estimate reproductive success; identify factors responsible for reduced productivity levels below the target of 1.0 chicks/pair. Initiate steps to minimize these factors.
- 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 predator populations 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 seabird 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.
- continue to acquire historic and potential roseate tern nesting islands within the approved acquisition boundary

### **Objective 5.3 (Alcids)**

Contribute to the Gulf of Maine Seabird Working Group and MDIFW Species Assessment goals of restoring self-sustaining, well-distributed populations of alcids, with particular emphasis on Atlantic puffin and razorbill.

*Background:* Atlantic puffin and razorbills are currently State-listed as threatened. Puffins nest on four Refuge islands; two of which (Seal Island and Matinicus Rock) contain 85% of their population in Maine. Razorbills also nest on three islands within the Refuge: Old Man, Seal, and Matinicus Rock, which includes over 90% of their population in Maine. Due to the limited size and distribution of breeding populations in Maine of both species, we are working to increase the number of active colonies on Refuge islands. MDIFW recently completed a Species Assessment for Atlantic puffin and razorbills in which they identified population and productivity goals (MDIFW 2000). In addition, MDIFW identified the need to increase the number of Maine islands occupied by nesting puffin from four to six, and increase the number of Maine islands supporting nesting razorbill from five to seven islands. Using the 2000 season as a population baseline, our goal will be to increase by 50% the number of breeding pairs of Atlantic puffin and razorbills. In addition, we are focusing management efforts on maintaining a minimum productivity level of 0.5 fledged chicks/nesting pair.

We are optimistic that razorbills, which have routinely been visiting Petit Manan Island during the breeding season, will initiate nesting there. We also hope that Seal Island will be fully occupied in the future. Currently, one pair of razorbills is nesting on Seal Island, but as many as 30 have been observed there (Breton 2001).

We are also interested in enhancing populations of black guillemots, another alcid species using Maine islands. We will continue to monitor their presence and use of Refuge islands in conjunction with our seabird work.

In addition to our management projects on six Refuge islands, we will contribute to this objective with our proposal to acquire and manage an additional 30 islands with active seabird nesting (See Goal 7). We would also continue to work with NAS in seabird management efforts on four other islands under other ownerships.

*Strategies:*

- continue to conduct daily censuses of black guillemots, Atlantic puffins and razorbills on or 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 monitor all puffin burrows on Petit Manan Island each year during the nesting season.



*Atlantic puffin*  
USFWS photo

- 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.
- 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 seabird 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.
- continue to acquire seabird nesting islands within the approved Refuge acquisition boundary.
- evaluate all current and future land acquisitions within the approved Refuge boundary for their suitability as management 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.

#### **Objective 5.4 (Herring and Black-backed Gulls)**

Control herring and great black-backed gull nesting and loafing on the six managed seabird islands to minimize inter-specific competition and predation on common, Arctic and roseate terns, and puffins, razorbills, and common eiders.

*Background:* Although we recognize gulls are native to coastal ecosystems, human activity has enabled their populations to expand way beyond historic levels, causing an imbalance between gull populations and the populations of most other colonial and beach nesting birds. Expanding gull populations and habitat loss along the coast of Maine were partly responsible for wide-scale population declines in many seabird populations during the last century. Gull numbers in Maine went from approximately 10,000 in 1900 to nearly 120,000 in 2002. 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 experienced a greater survival rate due to the abundance of food during the winter months. Both species are effective predators of other seabird eggs and young, and their presence can lead to complete nesting failure or island abandonment by many seabirds. Gulls also initiate nesting earlier in the season than terns, forcing the terns to nest in marginal habitat. As a result, terns and other seabirds may be more vulnerable to increased predation, inclement weather, and tides. Gull management efforts on our seabird management islands have proven to be 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. Our gull management methods are described in more detail in Chapter 3, but consist of harassment, nest and egg destruction, shooting, and/or limited use of avicides.

*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. Continue to monitor gull colony at Green Island to determine whether these birds are contributing to predation on Petit Manan Island.

### Objective 5.5 (Laughing Gulls)

Reduce the population growth trend of increasing laughing gull numbers on seabird management islands, but maintain their overall population distribution.

*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 the MDIFW- owned Eastern Egg Rock. These colonies represent the northern extreme of the laughing gull breeding range in the U.S., and they are State-listed as a species of special concern.



*Census activity*  
USFWS photo

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. GOMSWG members are concerned that these 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 (kleptoparasitism).

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 their population growth and productivity. Our study conducted on the tern colony in 2002 indicated that Arctic terns responded with a significantly higher level of productivity, as compared to recent years. National Audubon also carried out a similar control efforts on Eastern Egg Rock.

#### *Strategies:*

- continue to cooperate with National Audubon Society 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.

- 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 populations on the 3 managed islands when they are determined to be harming the productivity objectives for other seabirds of concern.
- continue to annually close seabird nesting islands to public visitation between April 1 and August 31.

### **Objective 5.6 (Common Murre)**

Contribute to the recovery of common murre in the Gulf of Maine by establishing and sustaining a breeding colony on Matinicus Rock.

*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 common 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 20<sup>th</sup> 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 the Gulf of Maine. 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.

*Strategies:*

- continue to utilize “social attraction” methods in cooperation with National Audubon Society to attract common murres to Matinicus Rock; a sound system broadcasting murre calls and murre decoys are set up each nesting season in early May.
- continue to annually close seabird 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.

### **Seabird Nesting Islands with No Active Management**

#### **Objective 5.7 (Seabirds)**

On the 25 Refuge islands not actively managed for nesting seabirds, continue to monitor species composition, nesting densities, and where feasible, eliminate threats.

*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 3,000 islands along Maine’s coast, seabirds currently utilize approximately 10% (MDIFW, B.Allen pers.com.).

In addition to the six managed seabird management islands currently within the Refuge, 25 additional Refuge islands provide nesting habitat for common terns, razorbills, black guillemots, common eiders, great cormorants, double-crested cormorants, Leach’s storm-petrels, and herring and

black-backed gulls. Our staff visit these islands less frequently due to limitations in staffing. However, statewide surveys have routinely been done by boat and aerial observation. A survey protocol, initiated in 2001, will require that we visit each seabird nesting island, 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, and MDIFW Species Assessments for common eiders (MDIFW 1999), Atlantic puffins and razorbills (MDIFW 1999), and Leach’s storm-petrels (MDIFW 1999).



Common eider hen  
USFWS photo

*Strategies:*

- continue to annually close seabird nesting islands to public visitation between April 1 and August 31.
- continue to survey at least five Refuge islands with nesting seabirds each year using Refuge staff, contractors, or partners to determine whether active management is warranted to maintain suitable nesting habitat; utilize proven habitat management techniques consistent with other Refuge management projects.
- continue to coordinate all efforts with GOMSWG members annually.

**Goal 6: Provide Enjoyment and Promote Stewardship of Coastal Maine and their Habitats by Providing Priority, Wildlife-Dependent Recreational and Educational Opportunities**

**Objective 6.1 (Environmental Education)**

Continue to provide opportunities for partner-led environmental education programs on Refuge lands

*Background:* Annually, we cooperate with the NAS and Damariscotta River Association in their classroom environmental education programs. We also have a partnership with the Chewonki Foundation and Hurricane Island Outward Bound School, who have established environmental education programs using Refuge lands. We continue to issue a special use permit to the Humboldt Research Station (formerly Eagle Hill Institute) for an “outdoor laboratory” on Refuge lands.

*Strategies:*

- continue to partner with Chewonki Foundation, Damariscotta River Association, National Audubon Society, and Hurricane Island Outward Bound to conduct curriculum-based educational programs in classrooms and on Refuge lands.
- continue to issue a special use permit to Humboldt Research Station for their outdoor classroom.

**Objective 6.2 (Environmental Interpretation)**

Maintain the environmental interpretive opportunities on Petit Manan Point and provide interpretive materials to commercial tour boat operators.

*Background:* Our current environmental interpretation program involves conducting two to three interpretive programs annually as staffing permits, maintaining an interpretive kiosk and panels on the Petit Manan Point Division, maintaining two interpretive trails, and sharing Refuge brochures and nesting status information to commercial seabird tour boat operators.

*Strategies:*

- continue to annually maintain the infrastructure on the Petit Manan Point Division, including access road, interpretive signs, and the Birch Point and John Hollingsworth trails.
- continue to conduct interpretive programs upon request when staffing permits.
- continue to provide periodic updates to commercial seabird tour boat operators during the nesting season.

**Objective 6.3 (Hunting)**

Continue to provide a diversity of hunting opportunities on Refuge lands.

*Background:* Hunting is one of the six priority public uses identified in the 1997 Refuge Improvement Act. We opened up portions of the Refuge to hunting during the 2001-2002 hunting season. Migratory game bird and waterfowl, and small and big game seasons were opened on the Sawyers Marsh and Gouldsboro Bay divisions. We also opened Bois Bubert Island to white-tail deer hunting. In addition, 22 Refuge islands were opened to migratory waterfowl hunting. Our plans would include opening all future islands acquired to migratory waterfowl hunting, unless we determine there are safety or overriding resource concerns that would make hunting incompatible.

*Strategies:*

- continue to implement the hunt program offering the variety of seasons noted above.
- continue policy that hunter access is by foot traffic only; no bicycles, horses, or ATVs will be allowed. The only exceptions are boat access to islands.
- 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.

**Objective 6.4 (Wildlife Observation and Photography)**

Maintain the current wildlife observation and photography opportunities provided on the Refuge mainland divisions (Maps 2-1 to 2-4).

*Background:* We currently maintain two foot trails on the mainland: the John 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 Hollingsworth Memorial Trail has parking for approximately eight cars; the Birch Point Trail has parking for approximately 10 cars. There are many times during the 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. The only fully

accessible facility on the Refuge is an informational kiosk on the main access road to Petit Manan Point.

Our current program also allows commercial photographers access to Refuge lands, which are otherwise closed to public access, under individual special use permits, and only when there is a direct benefit to the Service. In addition, we allow camping on two islands: Halifax and Bois Bubert, in cooperation with MITA, because of the unique wildlife observation and photography opportunities this affords.



*A bench on John Hollingsworth Memorial Trail, Petit Manan Point Division  
USFWS photo*

*Strategies:*

- continue policy that all trails will remain open to foot traffic only, including snowshoeing and cross country skiing; no bicycles, horses, or ATVs will be allowed. The only vehicle access is along the 1.1 mile refuge entrance road on Petit Manan Point, at the end of Pigeon Hill Rd.
- continue to allow commercial photographers access to Refuge lands under a special use permit only when the Service can benefit.
- continue to allow camping on Halifax and Bois Bubert islands in designated sites as part of the Maine Island Trail.

**Objective 6.5 (Public Access to Refuge Islands)**

Allow public access to islands to the extent it will not adversely impact Federal trust resources.

*Background:* Some sensitive areas require us to restrict public access to minimize disturbance, especially during the nesting season. Seabird nesting islands are closed to public use from April 1 to August 31 each year. Active bald eagle nesting islands are closed to public use from February 15 to August 31 each year. Historic bald eagle nesting islands are closed to public use from February 15 to at least May 15 each year. If an historic eagle site becomes active, the island is closed until August 31.

Most of Halifax Island is closed to protect botanical resources. Seal Island is closed to all public use due to unexploded ordinance. 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 Island Trail.

We utilize interns working on the islands to assist in informing potential visitors that the nesting islands are closed during the nesting season. Outside of the nesting season, interns will greet boaters upon landing and educate them about the management and restoration work and the sensitivity of seabirds to disturbance.

*Strategies:*

- continue to maintain seasonal access restrictions noted above.
- continue to maintain the seasonal “closure” signs that exist on several islands.
- as new islands are acquired, we will implement the seasonal access restrictions as warranted.

**Goal 7: Protect the Integrity of Coastal Maine Wildlife and Habitats through an Active Land Acquisition and Protection Program**

**Objective 7.1 (Service Land Acquisition)**

Continue Service acquisition of significant Maine coastal habitats from willing sellers within our approved boundary (467.1 acres) and seek new acquisition authority for an additional 30 islands (881 acres) and 153 acres of mainland (see Table 2-2 and Table 2-3).

*Background:* As we stated in the land protection discussion under “Actions Common to All Alternatives”, all alternatives include, at a minimum, continued Service acquisition of lands from willing sellers within the currently approved Refuge boundary. At present, we have approval to acquire 467.1 acres total consisting of 2 tracts (25 acres) on Petit Manan Point Division; 1 tract (94.6 acres) on the Sawyers Marsh Division; and 25 tracts on 14 islands (347.5 acres). 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. In addition to these acres, we also propose an expansion of mainland and islands as discussed below.

In Chapter 1, we describe how we have worked with the Service’s GOMP and our other conservation partners to develop a “nationally significant islands” list for coastal Maine. Three hundred and seventy-seven (377) islands are currently on the list; 126 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 our partners is to achieve permanent protection for the remaining 151 islands, and to manage these islands as needed to ensure the long term nesting success of species of management concern.

Since no single partner, including the Service, has the resources to achieve the 151 island goal single-handedly, this goal necessitates a strong partnership. The Service can contribute to this goal through fee simple acquisition or purchasing conservation easements, especially for those islands that need active management for Federal trust species. What typically happens is that the partners become aware of an individual island available for sale from a willing seller. The partners, including the Service, determine which of them through ownership, could best serve the long term protection of the respective island. The island’s specific resources of concern (e.g. seabirds, bald eagles, wading birds, or the endangered roseate tern), level of management or restoration required, or its proximity to other partner owned islands, current owner preferences, timing, and



*Great blue heron*  
Photo by Craig Snapp

availability of financial and administrative resources are all considered when determining which partner is best suited.

In this alternative, we have assumed a Service island acquisition rate of 2 islands/year for 15 years (30 islands total) using FY02 land acquisition funding (\$1mm/year) as a basis. For purposes of analysis, we have identified 30 specific islands for acquisition from the list of 151 nationally significant islands not currently protected long-term (see Table 2-2). It is important to recognize that we have no way of predicting at this time when, or even if, these islands would become available from willing sellers. Also, it is possible that new information may result in an island being taken off or added to the list, which would cause us to reevaluate our list of 30. These islands were selected primarily because they have higher numbers and productivity of nesting seabirds, or because roseate terns, a Federal-listed endangered species, historically nested on them.

In addition to the islands, we are proposing an expansion of 153.3 mainland acres to be acquired by the Service. The Sprague Neck tract, 150 acres, is a significant shorebird and black duck concentration area during migration. We would acquire this tract as a no-cost transfer from the U.S. Navy. The remaining three acres is a private tract surrounded by refuge lands in our Gouldsboro Bay Division. In addition to its value for wetlands, it is also important to acquire this small tract to make a more efficient administrative boundary.

*Strategies:*

- continue to acquire private lands from willing sellers within currently approved acquisition boundary; tracts on 14 islands (347.5 acres) and 120 acres of mainland are approved. All lands acquired would become part of the 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.
- continue to post new Refuge units with boundary signs as soon as they are acquired to establish that these lands are managed by the Service.
- in 2004, seek approval and begin to implement a Land Protection Plan for the Refuge, if approved, authorizing acquisition of 30 islands and two mainland tracts when willing sellers become available (see Table 2-2).

### **Objective 7.2 (Cooperative Protection and Management of Nesting Islands)**

Continue to assist State agencies, conservation organizations, and local land trusts in their efforts to protect and manage islands with high natural resource value.

*Background:* As we described in Objective 7.1 above, no single conservation partner, including the Service, has the resources to single-handedly achieve the 151 nationally significant nesting island protection goal. This goal necessitates a strong partnership among the many entities involved in land protection along Maine's coast. It is important that we continue to work together and complement each others' efforts.

*Strategies:*

- continue to work with land trusts and participate in GOMSWG to share resource information and identify island protection needs.
- continue to work with MITA in an informal Island Stewardship Program to monitor visitor use and resource impacts on five Refuge islands; meet with them two to three times/year.

### **Objective 7.3 (Cooperative Protection and Management of Important Mainland Habitats)**

Continue to assist State agencies, conservation organizations, and local land trusts in their efforts to protect and manage mainland habitats with high natural resource value.

*Background:* Similar to our discussion on islands, there is no single conservation partner, including the Service, who has the resources to protect all the significant habitats along the mainland coast. Unprotected salt marsh and estuaries of appreciable size, so important to migrating land birds, waterfowl, water birds, and shorebirds, constitutes thousands of acres along the coast. Therefore, we must work with our conservation partners to help them identify, protect, and manage these important habitat areas. With the exception of 153.3 acres noted in Objective 7.1 above, we are not proposing a significant mainland expansion in this alternative. The interagency Maine Wetlands Coalition is working to identify priority wetlands needing protection, management, or restoration. We will await the outcome of their report, which we expect within 3 years, before we consider a significant mainland expansion. Meanwhile, we may evaluate specific areas for Service acquisition on a case-by-case basis, assuming they are important to Federal trust resources, if asked to by the coalition. We would first ensure that we could comply with Service policies on acquisition and refuge boundary expansion. This would be followed by the appropriate NEPA analysis and documentation for each area.

*Strategies:*

- continue to coordinate, as needed, with the interagency Maine Wetlands Coalition who are working to identify priority coastal mainland wetlands in need of protection, management, or restoration.

**Objective 7.4 (Archeological and Historic Resources)**

Continue to comply with National Historic Preservation Act requirements to protect archeological and cultural resources.

*Background:* Service actions likely to affect archaeological and historic sites are routinely reviewed and assessed under the provisions of Sec. 106



*Libby Island lighthouse and boardwalk  
USFWS photo*

of the National Historic Preservation Act. To date, projects requiring such review on the Refuge have been confined to structural rehabilitation of historic lighthouse structures. Funding to pursue lighthouse maintenance to national historic preservation standards has been inconsistent and inadequate. It is expensive to maintain lighthouses due to the logistics of getting equipment off shore, the seasonality of the work, and the expertise required to maintain these structures to specific historic standards. Chapter 3 describes in greater detail the work that has been accomplished to date and the costs.

Refuge lands have never had a systematic archaeological survey.

*Strategies:*

- continue to pursue funding to maintain historic lighthouse structures to historic preservation standards; establish annual maintenance plans as funding becomes available.
- continue to survey for archeological or historic resources prior to any ground disturbing activities.

**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)**

Continue to work with researchers who are actively engaged in collecting information that will benefit the Service on a local, regional, or national level.

*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 often do not have 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 studies 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.

*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 once HSIMP is completed.
- continue research partnerships with MDIFW and other state agencies, NPS, NAS, USGS, and universities, and initiate new ones, that are directly beneficial to the Service on a local, regional, or national level.

**Objective 8.2 (Community Outreach)**

Continue to support the outreach efforts by the Friends of Maine Seabird Islands and continue other staff-led outreach activities that target large audiences.

*Background:* 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.

*Strategies:*

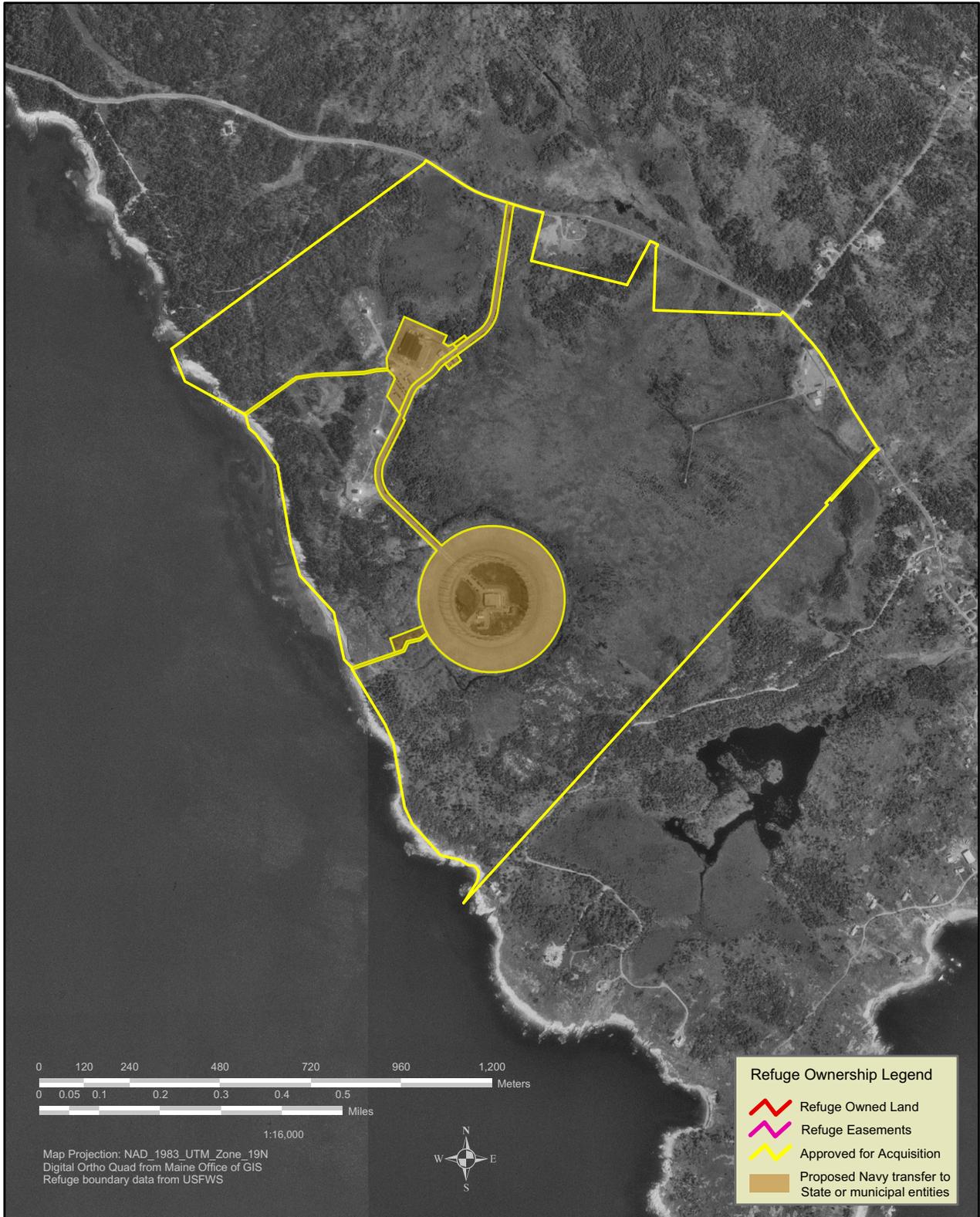
- continue to meet regularly with the Friends of Maine Seabird Islands group and support their efforts to advocate for the Refuge in local communities. Continue to provide them office space and other administrative support.
- continue with news releases, the biweekly column, and presentations as staffing and resources allow.



*Northern saw-whet owl*  
USFWS photo



**MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE**  
**COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT**  
**Corea Heath Division Public Use**  
Alternative A





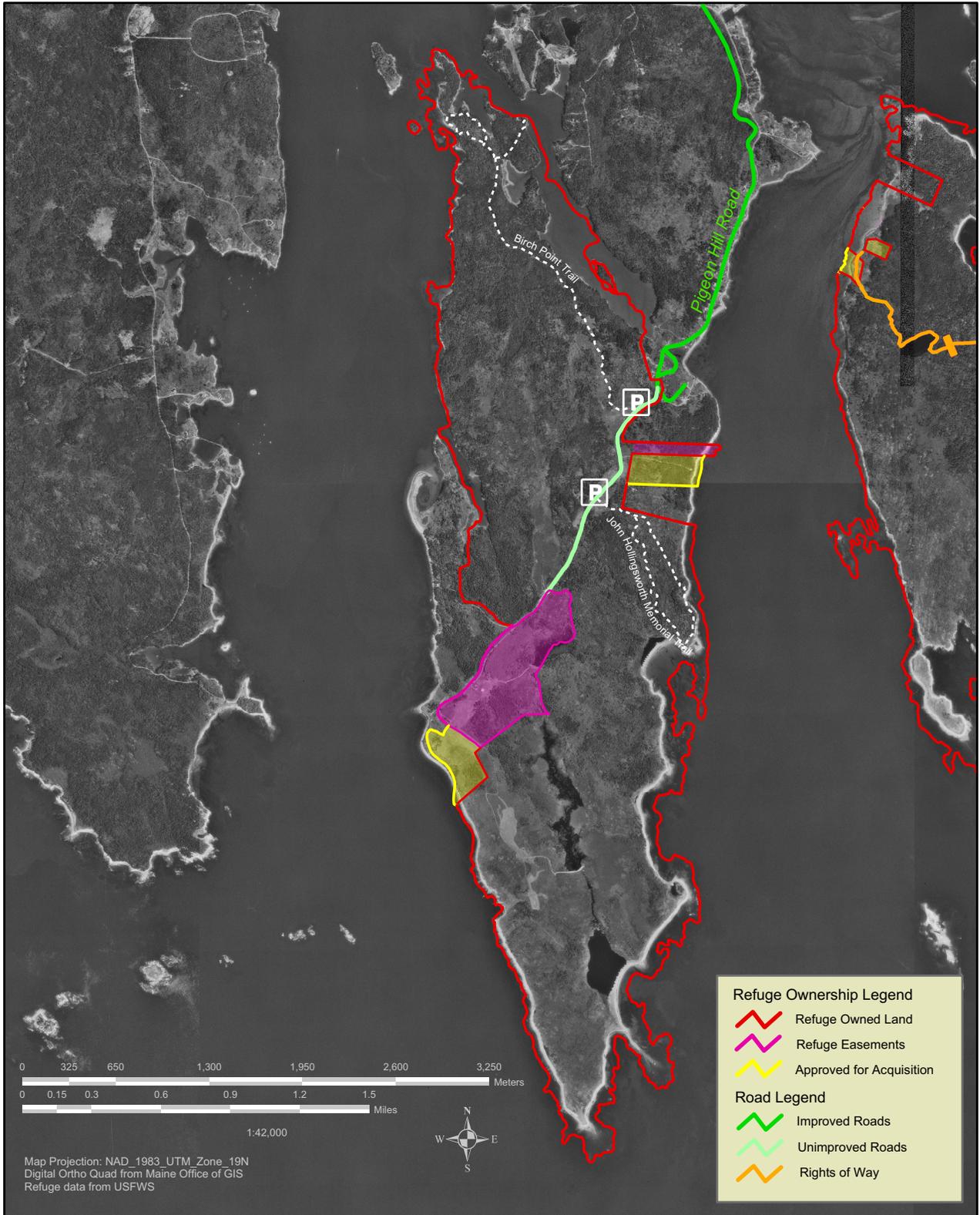
MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE  
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT  
**Gouldsboro Bay Division Public Use**  
Alternative A - Existing or Planned





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

Petit Manan Point Division Public Use  
Alternative A - Existing and Planned

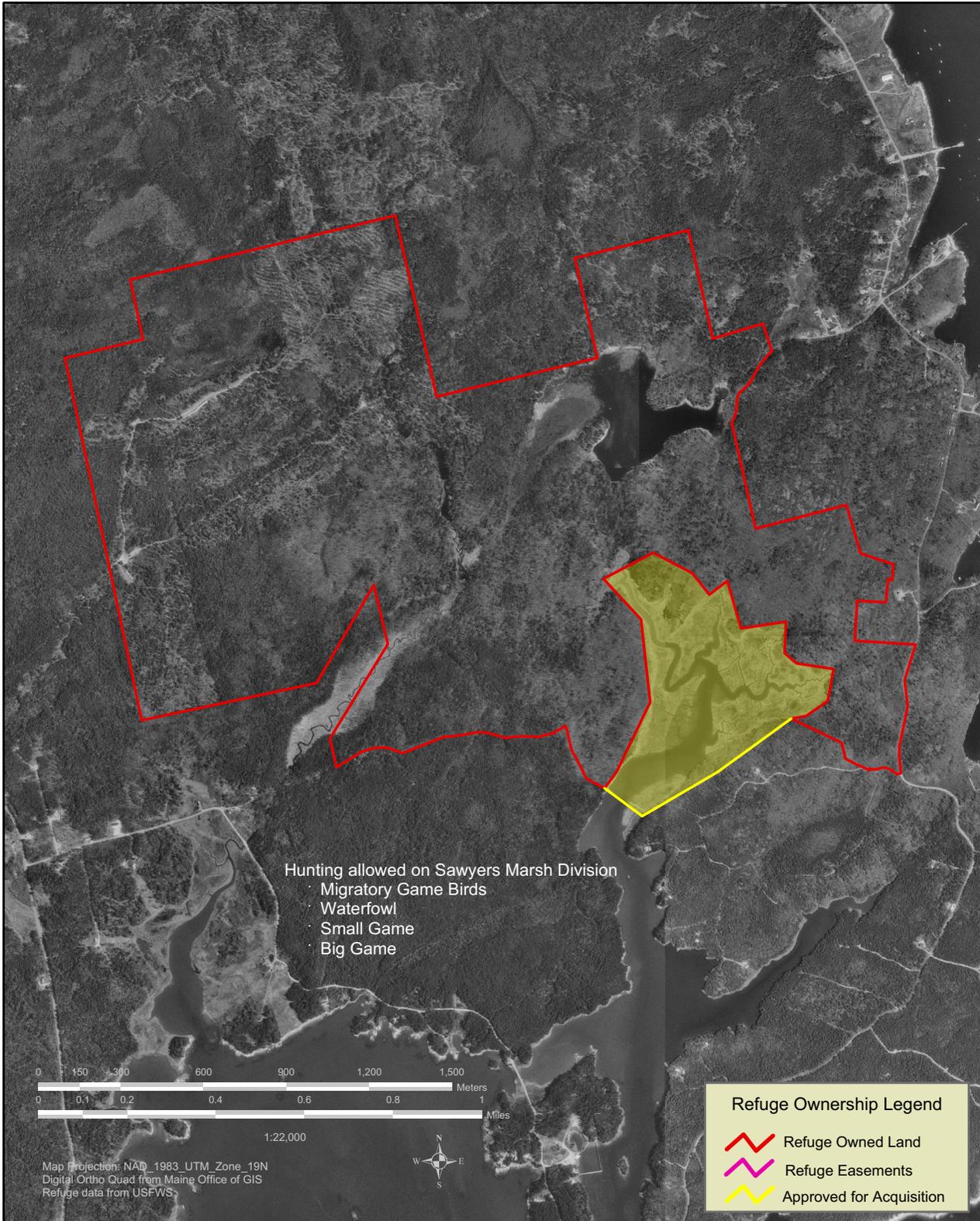




MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE  
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Sawyers Marsh Division Public Use

Alternative A - Existing or Planned



## Alternative B: The Service's Preferred Alternative

### Introduction

Alternative B is the alternative we are recommending to our Regional Director for implementation. It includes an array of management actions from Alternatives A, C, and D which, in our professional judgment, will work best towards achieving the refuges' purposes, the vision and goals for the Refuge, and Gulf of Maine, State, and regional conservation plans. In our opinion, it is the alternative that would most effectively address the significant issues. We believe it is reasonable, feasible, and practicable.

In all program areas, Alternative B would 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 would 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 we propose for Service acquisition 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



*Meadow Brook flowage on Petit Manan Point Division*  
USFWS photo

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 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 white-tailed deer hunting during specific seasons on the Petit Manan Point Division. We would expect an increase in visitation of approximately 15-20% over current levels with implementation of these programs. This increased use would occur primarily on the mainland divisions. Maps 2-5 to 2-8 (pages 2-110 to 2-113) 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 resource management by the Service and our management priorities in the local communities we serve.

Finally, this alternative 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.

**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 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.



*Hooded warbler*  
USFWS photo

*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.

- 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.



Cedar waxwing - MAPS survey  
USFWS photo

- 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 consideration. 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 stopover 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.

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.



*Ducks flying off Cranberry Marsh, a freshwater impoundment on Petit Manan Point Division*  
USFWS photo

*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.

*Peregrine falcon*

Photo courtesy of the Cornell Laboratory of Ornithology

- 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 priority 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 the most appropriate management of age classes given the surrounding



Cape May Warbler  
USFWS photo

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 offshore 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 goose-foot (*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 consumes 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



*Common eider hen*  
USFWS photo

(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 shore-

birds. 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).



*Aquaculture pens near Cross Island*  
USFWS photo

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).

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.



*Purple sandpiper banding*

*Background:* The purple sandpiper breeds in high northern latitudes and winters further north than any other shorebird. During winter months, they 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



*Roseate tern*

Photo courtesy of Bill Silliker, Jr.

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.

*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).



Razorbills  
USFWS photo

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



*Black guillemot*  
USFWS photo

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 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.
- 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, cooperate with NAS to evaluate monitoring protocol for alcids nesting within the Refuge.
- 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.



*Laughing gulls*  
Photo by Craig Snapp

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.
- 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 murrens 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 murrens 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 20<sup>th</sup> 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.

*Strategies:*

- continue to utilize “social attraction” methods in cooperation with National Audubon Society to attract common murrens 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:*



*Murre decoys*  
USFWS photo

- 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.

*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;



*Environmental education*  
USFWS photo

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 2-5 to 2-8 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.



Visitors touring Machias Seal Island  
USFWS photo

*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.

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 our proposal under this alternative is to open this division, 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 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.



*White-tailed deer on Petit Manan Point Division*  
Photo by Craig Snapp

#### *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 2-5 to 2-8).

*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



*A visitor on the Birch Point Trail, Petit Manan Point Division*  
USFWS photo

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.
- 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: 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 its 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.



*Freshwater pond on Bois Bubert Island*  
USFWS photo

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.
- 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 Table 2-2, Table 2-3, and the Land Protection Plan, Appendix A).

*Background:* We described in Chapter 1 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 avail-

able 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 (Table 2-2 and Appendix A). 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 historical 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.

*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 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 alternative, we would recommend all 8 WSAs for designation as wilderness in the final CCP. 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 would be a preliminary administrative determination that will receive further review and possible modification by the Director. If approved, we would forward our recommendations from the Director, through the Secretary 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 National Wildlife Refuge System Improvement Act, we would manage the WSAs in accordance with management direction in the 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 the final 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 Core 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 struc-



*Historic photo of Petit Manan Island Lighthouse*  
Photo from The National Archives

tures, 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.

*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.

**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**

- establish a relationship with national lighthouse preservation organizations; seek mutually beneficial partnerships.

**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:*

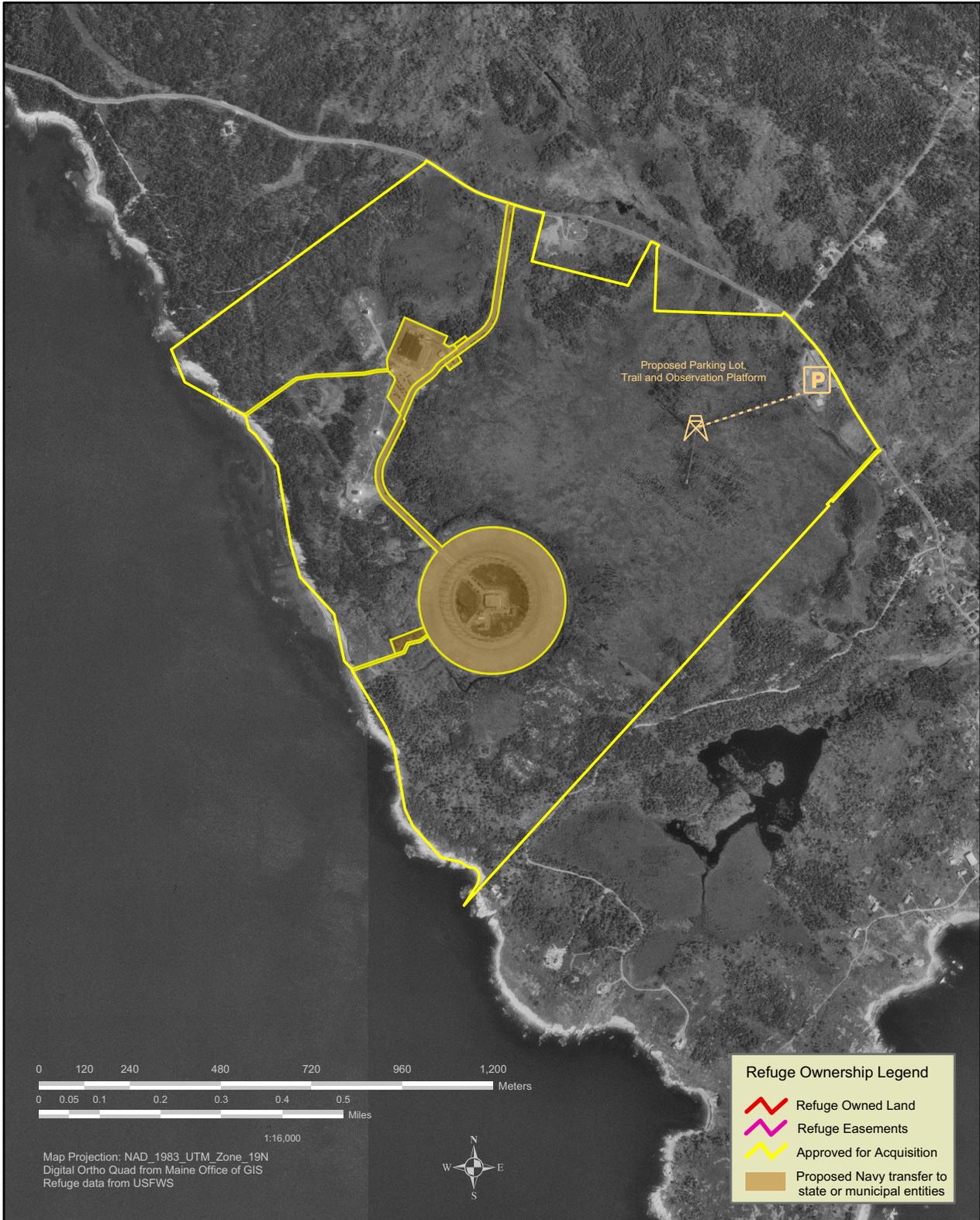
*Within 5 years of CCP implementation:*

- 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  
Alternative B - Service's Preferred Alternative

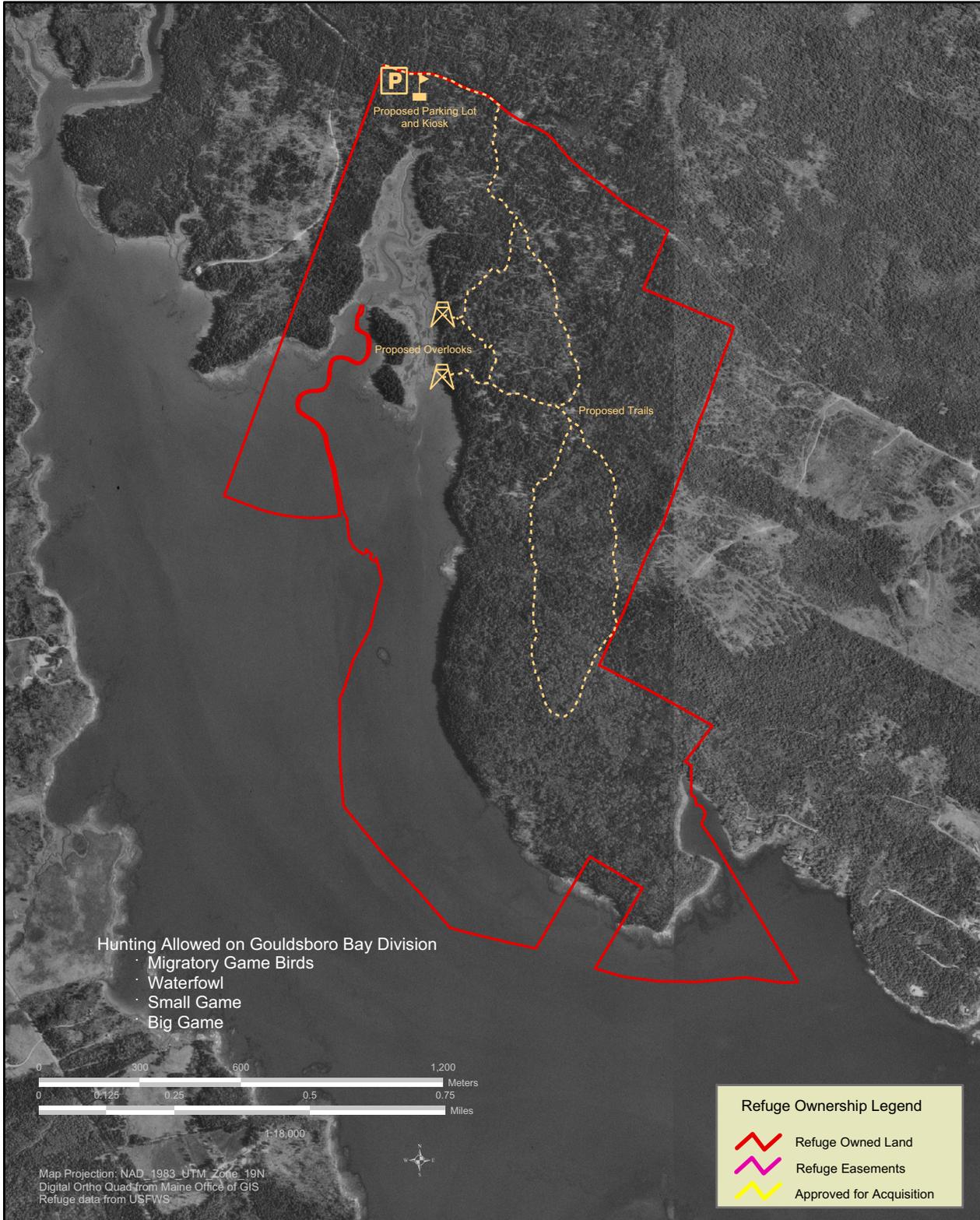




MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE  
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

Gouldsboro Bay Division Public Use

Alternative B - Service's Preferred Alternative

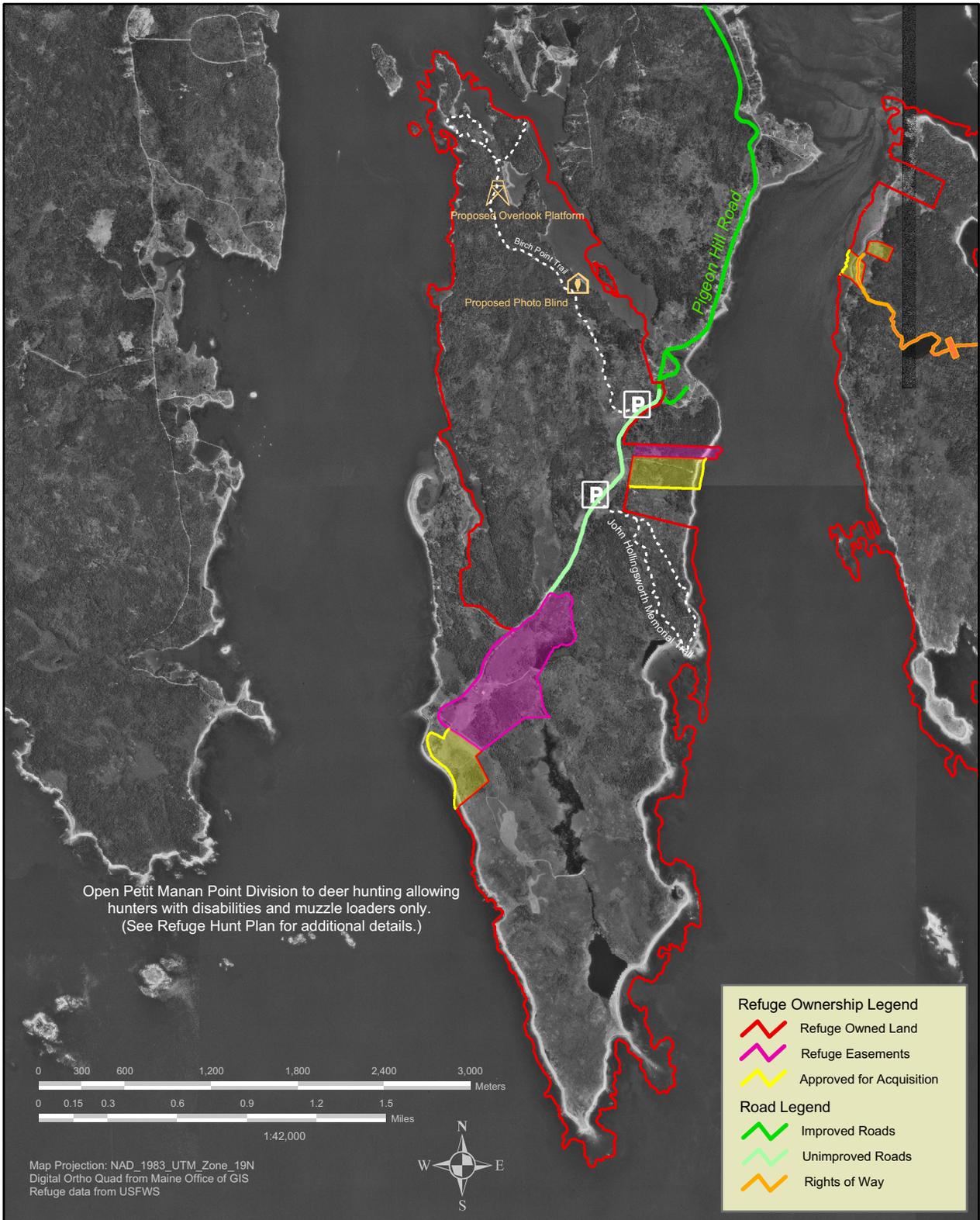




MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE  
 COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT

**Petit Manan Point Division Public Use**

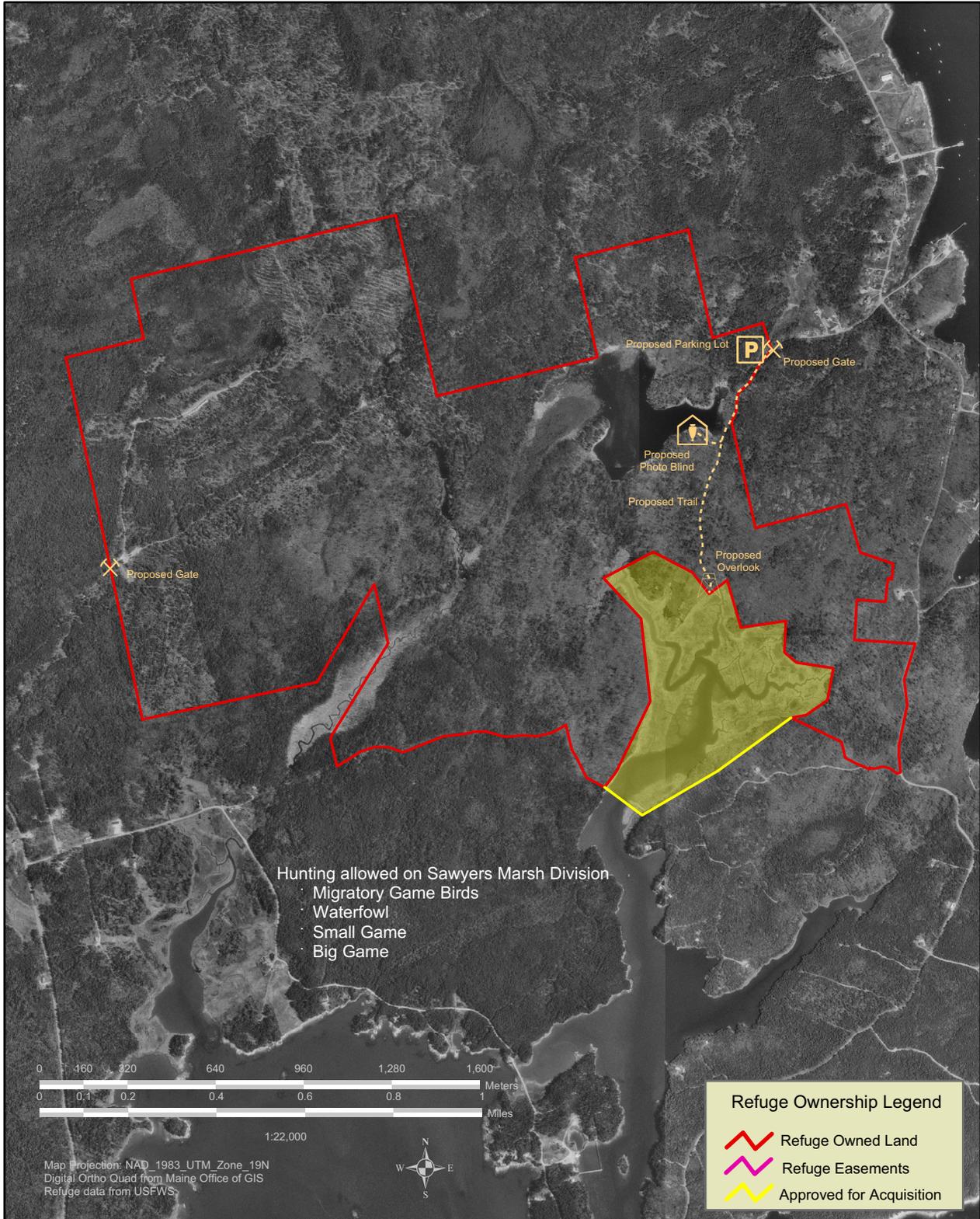
Alternative B - Service's Preferred Alternative





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

Sawyers Marsh Division Public Use  
Alternative B - Service's Preferred Alternative



## Alternative C

### Introduction

Alternative C essentially expands upon Alternative B, with the expectation that more funding and staffing would allow us to implement more extensive biological programs, substantially increase the number of Refuge islands, and appreciably increase the number and quality of our priority public use programs. The objectives under each goal are very similar to Alternative B; generally, the difference is in the strategies, whereby a greater commitment of resources would allow us to reach our goals and objectives sooner and more comprehensively.

The protection, management, and restoration of seabirds would remain our top management priority. We would increase our responsibility in promoting nesting seabird management in the Gulf of Maine by establishing 12 new seabird projects over the next 15 years. As with Alternative B, our other priority biological programs would become more focused to benefit species of concern, namely migratory land birds, waterfowl and shorebirds. Similar to Alternative B, we would continue our habitat management activities on the Petit Manan Point Division and the seabird management islands using a combination of treatments such as mechanical, prescribed fire, herbicides, and sheep grazing, as necessary. Our biological inventory and monitoring program would be even further expanded from that proposed in Alternative B.

In comparison to the other alternatives, Alternative C would recommend the most expansive land acquisition and cooperative land protection program. This alternative would include Service acquisition of the 467.1 acres in the currently approved boundary, as well as all, or portions of the larger, 151 unprotected, nationally significant coastal nesting islands (approximately 6,310 acres; see Table 2-2 and Table 2-3). In addition, the same mainland tracts (153 acres) important to migratory waterfowl and shorebirds proposed in Alternative B would be included. We would also evaluate additional mainland tracts for Service acquisition, on a case-by-



*Double-crested cormorants*  
USFWS photo

case basis as they become available from willing sellers, if they are identified in the North American Waterfowl or Joint Venture plans as important wetlands. In addition to Service acquisition, we would continue to work with MDIFW, other GOMSWG members, and land conservation partners to support their efforts to protect other coastal habitat areas important to Federal trust resources.

Alternative C would notably increase opportunities for priority wildlife-dependent public uses, especially in environmental education and interpretation on the mainland. We would expand on those opportunities proposed in Alternative B, featuring more programs on Refuge lands. Under Alternative C, we would

evaluate all islands individually to determine the time period for restricting public use and access depending on which species occur there, how many are nesting, and their timing in a given year. This would result in a range of seasonal public access restrictions among the islands, but might afford more user access days overall compared to the other alternatives. We would expect an increase of 25-30% in our current visitation as a result of expanding our environmental education and interpretive programs, providing access and interpretation on each of our mainland divisions, and working much more extensively in local communities. Most of this increased visitation would occur on the mainland divisions. Maps 2-9 to 2-12 (pages 2-127 to 2-130) depict our existing and proposed infrastructure on the four mainland divisions.

Similar to Alternative B, implementation of Alternative C would enhance local community outreach and partnerships, continue to encourage our Rockportbased Friends of Maine Seabird Islands group and create two more chapters, and improve our relationships with our neighbors and elected officials. We believe these efforts would strengthen support for the Service and our Refuge management priorities in the local communities we serve.

Finally, as with Alternative B, we would recommend 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 would not change appreciably over how we manage them currently. We have no infrastructure in place, nor do we have any management activities planned that would be affected by this designation. We believe these islands would be an important addition to the National Wilderness Preservation System. Under Alternative C, we would review all newly acquired Refuge lands for their wilderness potential at the time of acquisition.

Since Alternative C primarily builds off of the goals and objectives in Alternative B, our description below highlights the differences between the two alternatives. This is intended to minimize redundancy.

**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)**

Same as Alternative B, except modify the strategies to include:

- Up to 250 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.

**Objective 1.2 (Northern Hardwood-Mixed Forest)**

In addition to Alternative B, include a strategies to:

- with assistance from a professional forester, evaluate the health of these forested stands to determine whether active management is needed to

enhance their condition and ensure longevity. Develop stand prescriptions including the consideration of regeneration needs (e.g. planting, selective harvest of overstory, thinning of understory) to maintain desired species composition and stand structure, and control of pests and pathogens. Also, evaluate the need to improve the density and composition of the shrub understory, a vital component of the overall habitat quality for many land birds of conservation concern.

- work with a Service's Land Management Demonstration Biologist to demonstrate and evaluate forest management to benefit high priority bird species. In particular, evaluate how well stand-level management could provide for habitat needs of priority bird species not well known.

### **Objective 1.3 (Mature Red Spruce-Balsam Fir)**

In addition to Alternative B, include strategies to:

- with assistance from a professional forester, evaluate the health of these forested stands to determine whether active management is needed to enhance their condition and ensure longevity. Develop stand prescriptions including the consideration of regeneration needs (e.g. planting, selective harvest of overstory, thinning of understory) to maintain desired species composition and stand structure, and control of pests and pathogens. Also, evaluate the need to improve the density and composition of the shrub understory, a vital component of the overall habitat quality for many land birds of conservation concern.
- work with a Service's Land Management Demonstration Biologist to demonstrate and evaluate forest management to benefit high priority bird species. In particular, evaluate how well stand level management could provide for habitat needs of priority bird species not well known.

### **Objective 1.4 (Early Successional Forest-Edge)**

Same as Alternative B.

### **Objective 1.5 (Rare Plants)**

In addition to Alternative B, include strategies to:

- develop individual site management plans for each rare plant population, establishing inventory and monitoring guidelines, and an implementation schedule for habitat enhancement or restoration projects.
- Up to 250 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.

**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)**

Same as Alternative B.

**Objective 2.2 (Freshwater Impoundments)**

Same as Alternative B.

**Objective 2.3 (Vernal Pool Wetlands)**

Same as Alternative B.



*Arctic tern feeding chick*

Photo by Bill Silliker, Jr.

**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**

**Sites Objective 3.1 (Bald Eagle Nesting Islands)**

Same as Alternative B, except modify the strategy on the seasonal restriction to read:

- each nesting site would be evaluated separately to determine the most effective public access closure period based on the timing of each pair's nesting cycle and their observed sensitivity to disturbance. As such, the public closure period would be expected to vary among the four active nest sites, requiring extensive use of signing and outreach to let the public know the differences. It is possible that some island closure periods could be shorter than the existing February 15 to August 31 period, while others could be longer.

**Objective 3.2 (Mature Red Spruce-Balsam Fir)**

In addition to Alternative B, include the following strategy: with assistance from a professional forester, evaluate the health of these forested stands to determine whether active management is needed to enhance their condition

and ensure longevity. Develop stand prescriptions including the consideration of regeneration needs (e.g. planting, selective harvest of overstory, thinning of understory) to maintain desired species composition and stand structure, and control of pests and pathogens. Also, evaluate the need to improve the density and composition of the shrub understory, a vital component of the overall habitat quality for many land birds of conservation concern.

**Objective 3.3 (Early Successional Forest-Edge)**

Same as Alternative B.

**Objective 3.4 (Migratory Landbirds)**

Same as Alternative B.

**Objective 3.5 (Baseline Biological Inventories)**

Same as Alternative B, except modify the strategy on the number of inventory surveys to read:

- establish protocol to conduct baseline vegetation and wildlife inventory surveys on at least 12 Refuge islands per year (double the effort in Alternative B). Efforts would continue until all Refuge islands are inventoried. Consider the use of contractors or initiate cooperative efforts with universities to complete the surveys. Store all relevant information in GIS database.

**Objective 3.6 (Rare Plants)**

Same as Alternative B, except modify the strategy on prescribed fire to include:

- Up to 250 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.

**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)**

Same as Alternative B.

**Objective 4.2 (Intertidal Harvesting)**

In addition to Alternative B, include a strategy to:

- cooperate with MDIFW, MDMR, USGS, and our other conservation and university partners to design and sponsor a research program to fully evaluate the short and long-term impacts of inter-tidal resource harvesting on Federal trust species, their habitats, and the integrity of

the island ecosystem. Of particular interest is determining what factors are influencing productivity and survival of Federal trust species.

#### **Objective 4.3 (Aquaculture Facilities)**

In addition to Alternative B, include a strategy to:

- cooperate with MDIFW, MDMR, USGS, and our other conservation and university partners to design and sponsor a research program to fully evaluate the short and long-term impacts of aquaculture facilities on Federal trust species, their habitats, and the island ecosystem. Of particular interest is determining what factors are influencing productivity and survival of Federal trust species.

#### **Objective 4.4 (Fall Shorebird Migration)**

Same as Alternative B.

#### **Objective 4.5 (Winter Shorebird Migration)**

Same as Alternative B.

### **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 Management**

##### **Objective 5.1 (Common and Arctic Tern)**

In addition to Alternative B, include strategies to:

- develop island-specific HMPs establishing population and habitat goals and objectives for these seabirds as well as other species of concern.
- develop partnership agreements with private landowners of coastal nesting islands to promote their protection, management, and restoration of habitats for nesting seabirds and other species of concern.

##### **Objective 5.2 (Roseate Tern)**

Same as Alternative B, and including the seabird strategies noted above for common and Arctic tern.

##### **Objective 5.3 (Alcids)**

Same as Alternative B, and including the seabird strategies noted above for common and Arctic tern.

##### **Objective 5.4 (Laughing Gulls)**

Same as Alternative B.

**Objective 5.5 (Herring and Black-backed Gulls)**

Same as Alternative B.

**Objective 5.6 (Common Murre)**

Same as Alternative B, and including the seabird strategies noted above for common and Arctic tern.

**Objective 5.7 (Leach's Storm-Petrel)**

Same as Alternative B, and including the seabird strategies noted above for common and Arctic tern.

**Objective 5.8 (Common Eider)**

Same as Alternative B, and including the seabird strategies noted above for common and Arctic tern.

**Objective 5.9 (New Seabird Management Projects)**

Modify the Alternative B objective to read:

Consistent with Regional seabird population and distribution goals, and Refuge expansion opportunities, increase nesting seabird populations and improve their distribution in the Gulf of Maine by establishing 12 new seabird management projects on Refuge lands.

Strategies would be the same as Alternative B, except modify the strategy on the new island management schedule to read:

- initiate at least two seabird management projects within five years of CCP implementation, with subsequent projects initiated every two to three years thereafter until twelve are established. Increase the number of seasonal crews staffing the islands commensurate with the number of projects.

**Seabird Nesting Islands with No Active Management**

**Objective 5.10 (Seabirds)**

Same as Alternative B.

**Objective 5.11 (Great Cormorant)**

Same as Alternative B.

**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)**

In addition to Alternative B, include strategies to:

- develop a web-based environmental education program for students around the world to learn about seabirds. A camera would be installed to view puffins in their burrows, or to view the entire seabird colony on Petit Manan Island. Research data would be posted on the website with accompanying lesson plans.
- hire at least two interns to help develop and implement environmental education programs.

**Objective 6.2 (Environmental Interpretation)**

In addition to Alternative B, include strategies to (see Maps 2-9 to 2-12):

- install interpretive panels on at least three U.S. Route 1 roadside rest areas, showcasing seabird management and other Refuge coastal programs.
- hire at least two summer interpretive interns to help develop and implement interpretive programs on Refuge mainland divisions (same interns as objective 6.1).

**Objective 6.3 (Environmental Interpretation - Commercial Tours)**

Same as Alternative B.

**Objective 6.4 (Hunting)**

Same as Alternative B (See Maps 2-9 to 2-12).

**Objective 6.5 (Wildlife Observation and Photography)**

In addition to Alternative B, include strategies to (See Maps 2-9 to 2-12):

- evaluate the compatibility of opening up Petit Manan Island and other select Refuge islands to photography tours during the nesting season, implement if feasible and compatible..
- work with a sponsor to fund the placement of cameras at one or more seabird nesting sites and post the live footage in real time on the Refuge website.
- construct two additional photo blinds on mainland divisions.

**Objective 6.6 (Public Access to Refuge Islands)**

Same as Alternative B.

### Objective 6.7 (Furbearer Trapping Program)

Allow furbearer trapping to occur, in accordance with State and Refuge regulations, on Petit Manan Point, Gouldsboro Bay, and Sawyers Marsh divisions, and Cross and Bois Bubert islands.

*Background:* Furbearers are mammals that are harvested for their fur. In Maine, these include coyote, red and gray fox, bobcat, fisher, marten, raccoon, skunk, short-and long-tailed weasels, mink otter, beaver, muskrat, and opossum (<http://www.state.me.us>). Lynx, which are Federal-listed as threatened, are not included due to their low population levels across their range in the U.S. While furbearer trapping is not a priority public use as defined in the 1997 Refuge Improvement Act, it is an historic and traditional wildlife-dependent activity in Maine. Trapping provides income, recreation, and an outdoor lifestyle for those engaged in this activity.

Our program would basically adhere to State trapping regulations with some modifications to minimize disturbance to migrating waterfowl. The MDIFW manages furbearer populations for the benefit of a public with diverse opinions. According to their 2002 Wildlife Division Research and

Management Report, the furbearer management objectives include preserving or sustaining furbearer populations for their biological, ecological, economic, aesthetic and subsistence, as well as for recreational, scientific, and educational purposes (MDIFW, 2002). Through the International Association of Fish and Wildlife Agencies, there is an effort to develop Best Management Practices (BMPs) for regulated trapping in the U.S. These BMPs will be recommended to all state fish and wildlife agencies for incorporation into regulated trapping programs and trapper education programs. As these become available, they would be included in the Refuge program.

On the Refuge, we would not allow trapping on the mainland units during the waterfowl migration season (September through November). During this time, waterfowl are concentrating in the thousands in the wetlands; they are building up their reserves prior to their southerly migration by foraging and resting on refuge lands. Trappers placing and checking traps regularly in areas where birds are congregating would cause a flight response. This response results in the birds using energy reserves needed for migration.



*Terns flying overhead while researchers count nests*  
USFWS photo

*Strategies:**Within 5 years of CCP implementation:*

- develop a Furbearer Management Plan for the Refuge.
- complete the approval package to open Petit Manan Point, Gouldsboro Bay, and Sawyers Marsh divisions, and Cross and Bois Bubert islands to trapping under State and Refuge regulations.
- work with MDIFW to monitor and record annual harvest levels and administer the program.

**Goal 7: Protect the Integrity of Coastal Maine Wildlife and Habitats through an Active Land Acquisition and Protection Program**

**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 151 nationally significant nesting islands which currently lack permanent protection (see Table 2-2 and Table 2-3).

*Background:* We described in Chapter 1 how we have worked with the Service's GOMP, MDIFW, and our other conservation partners to develop a "nationally significant 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, or portions of larger 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. Under this alternative, the Service would lead this effort through acquisition of all 151 islands, or portions of the larger islands identified in Table 2.2. On larger islands (>200 acres), the "portions" would include an approximately 125 acre protective buffer areas around active bald eagle nest sites. This would allow us the ultimate flexibility to actively manage these islands as needed for Federal trust species and would insure their permanent protection in perpetuity. The Service would consider fee simple acquisition, purchase of conservation easements, acceptance of land donations, land transfers or exchanges as methods of acquisition. Under this alternative, and given the number of islands proposed, we would pursue conservation easements, or acquisition by donation, transfer, or exchange in greater proportion than the other alternatives.

While the Service would take the lead in protecting all 151 islands, it would continue to be imperative that a strong land protection partnership exist. The sheer number of islands with significant resource values, and the fact that nesting bird populations could shift among the islands, requires this. We would continue to rely on our partners to share their expertise, equipment and other operational resources, and field assistance wherever possible. We would continue to seek their assistance in outreach

to island owners. In addition, this objective necessitates a notable increase in Service staffing and funding to acquire and manage these islands. We would also look to our partners to help us identify funding sources and mechanisms to purchase and manage islands.

*Strategies:*

- continue to acquire private lands 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.
- with approval, implement a Land Protection Plan (LPP) for the Refuge authorizing acquisition from willing sellers of all, or portions of larger, the 151 islands identified in Table 2.2. On larger islands (>200 acres), the “portions” would include an approximately 125 acre protective buffer areas around active bald eagle nest sites. Approximately 6,310 acres total would be targeted for Service acquisition.
- develop an outreach plan with partners to determine how and when it is best to contact island owners.

**Objective 7.2 (Cooperative Protection and Management of Islands)**

Support the efforts of our land conservation partners in protecting and managing islands important to Federal trust resources, but not protected long-term, and not proposed for Service acquisition in the Land Protection Plan.

*Background:* While we propose Service acquisition of all 151 nationally significant islands known to us that currently are not permanently protected, there are other unprotected islands supporting Federal trust species. Protection of Maine coastal islands has always been a partnership effort, and would continue to be so. We would continue to play a role in identifying important islands supporting Federal trust species.

Although we would take a lead role in protecting the nationally significant islands, it would be our hope that our partners would take the lead in acquiring whatever rights are needed to permanently protect other islands important for Federal trust species. Within the limits of our funding and staffing, we would be willing to share in management of these islands.

Cooperative management agreements with conservation landowners are one tool to achieve resource objectives on 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 Land Acquisition and Protection)**

In addition to Alternative B, include a strategy to:

- as opportunities arise from willing sellers, pursue Service acquisition of mainland tracts with important migratory waterfowl values within Joint Venture focus areas, and which lie near current Refuge lands. Since none are known or anticipated at this time, a separate NEPA document would be necessary to obtain approval. All lands acquired would become part of Petit Manan Refuge.

**Objective 7.4 (Local Support for Land Acquisition)**

Same as Alternative B.

**Objective 7.5 (Wilderness Designation)**

Same as Alternative B.

**Objective 7.6 (Special Designation for Corea Heath Division)**

Same as Alternative B.

**Objective 7.7 (Archeological Resources)**

In addition to Alternative B, include strategies to:

- initiate an archeological field investigation on all Refuge lands and record all sites in a GIS.
- For all recorded sites, develop individual site plans to insure their protection from environmental and human impacts.

**Objective 7.8 (Historic Resources)**

Same as Alternative B.

**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)**

Same as Alternative B.

**Objective 8.2 (Law Enforcement Partnerships)**

In addition to Alternative B, include strategies to:

- hire two full time Park Rangers (GS-7 and GS-9) to increase outreach and law enforcement.
- obtain an AM radio frequency for visitors to tune in for current Refuge information and regulations (e.g. openings/closings, events, etc.)

**Objective 8.3 (Community Outreach)**

In addition to Alternative B, include strategies to:

- expand the existing Friends of Maine Seabird Islands group to include two additional chapters; one would be in downeast Maine, another would be located south of Rockport.
- conduct annual workshop for kayak/canoe outfitters and guides, focusing on the importance of coastal islands to Federal trust resources and teaching low impact, responsible use of the islands.
- promote guided educational tours with special programs for members of the local community on Refuge mainland.
- hire two full time Park Rangers to increase outreach and law enforcement (same positions as objective 8.2 above).
- obtain an AM radio frequency for visitors to tune in for current Refuge information and regulations (e.g. openings/closings, events, etc.)

**Objective 8.4 (Elected Officials Outreach)**

Same as Alternative B.

**Objective 8.5 (Adjacent Landowner Outreach)**

In addition to Alternative B, include strategies to:

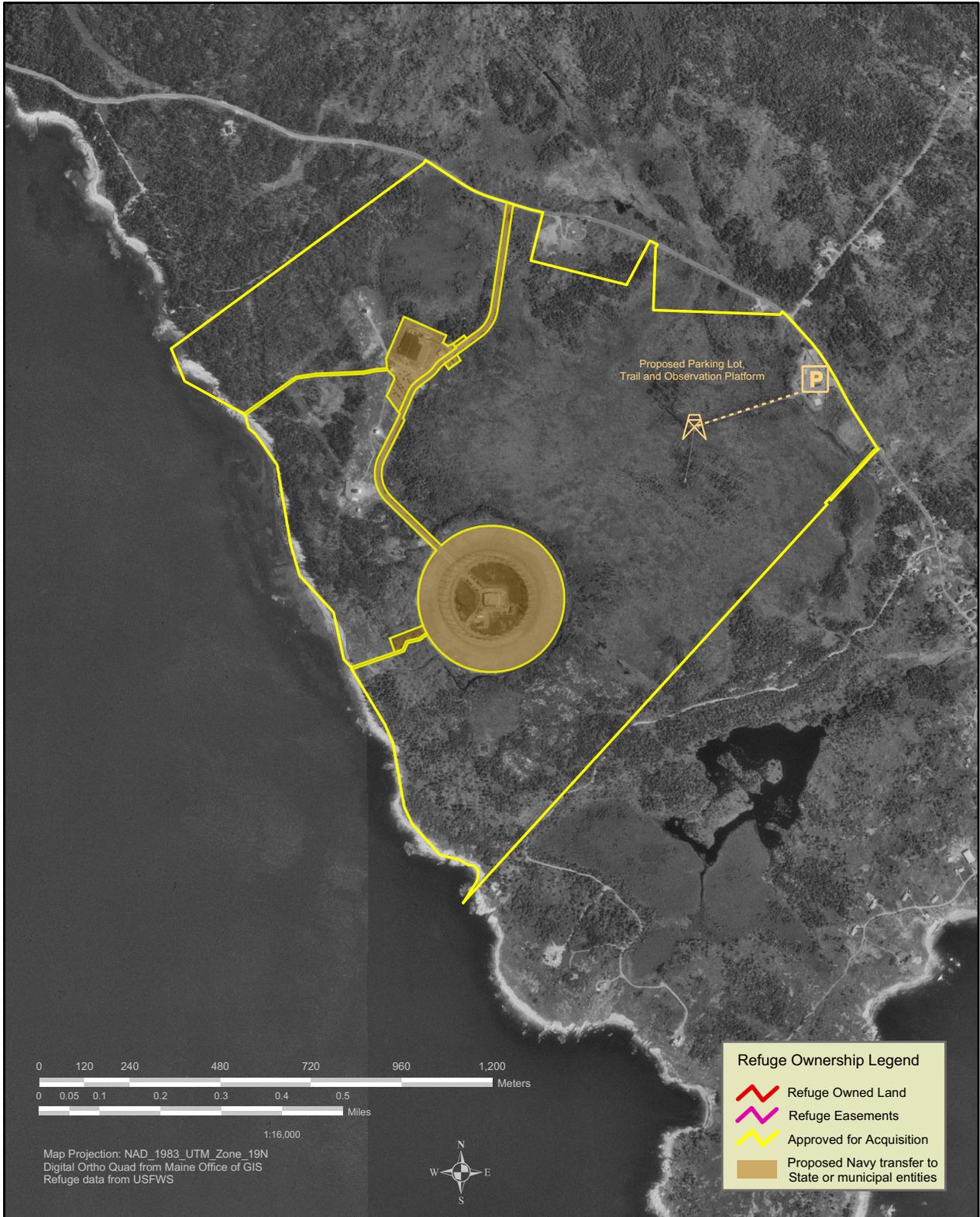
- in the vicinity of Refuge islands, work with private island owners of coastal nesting islands to promote their protection, management, and restoration of nesting seabirds, wading birds, and bald eagles.
- develop an outreach plan with partners to determine how and when to contact island owners, especially those that own islands in the LPP.



MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE  
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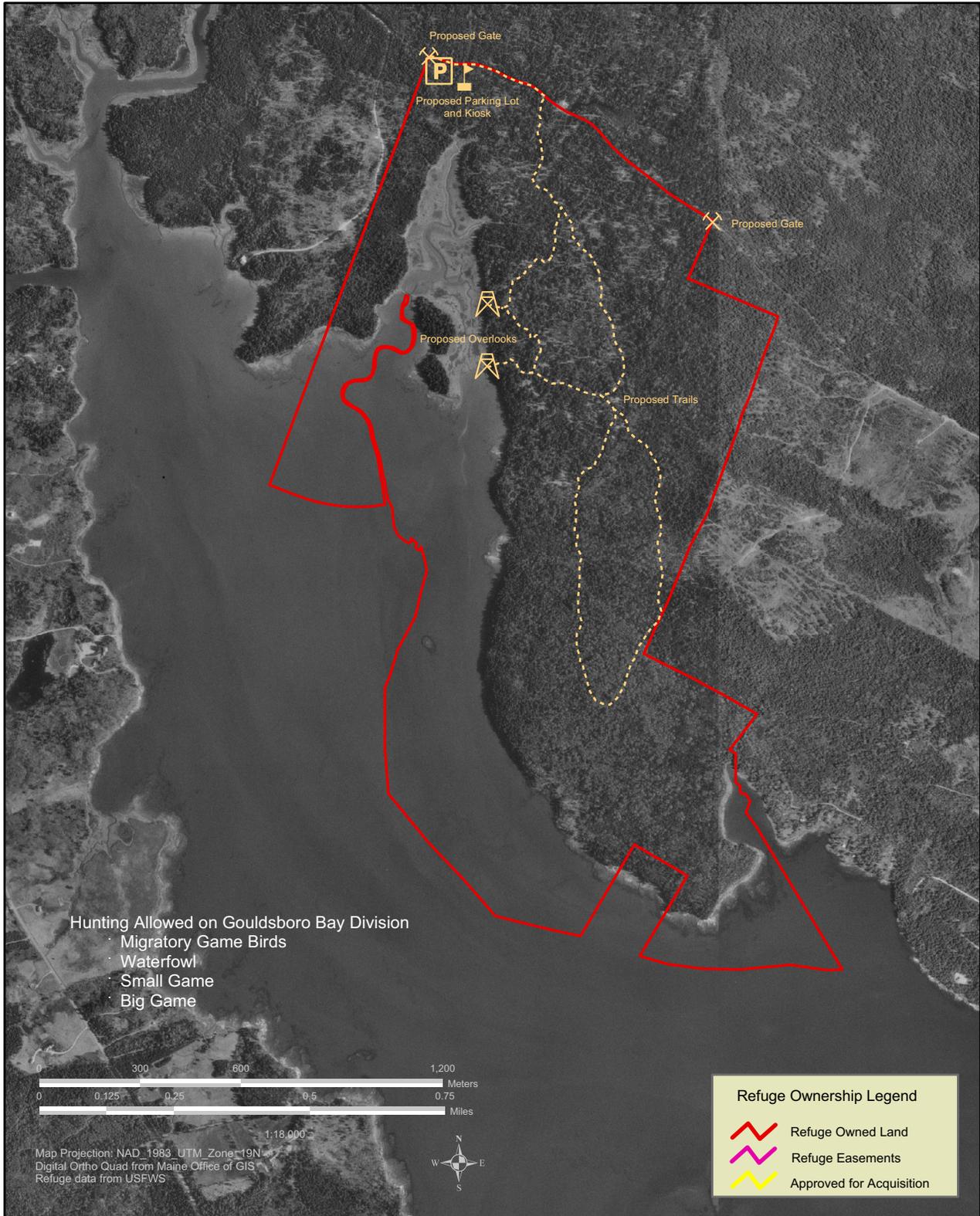
Corea Heath Division Public Use

Alternative C



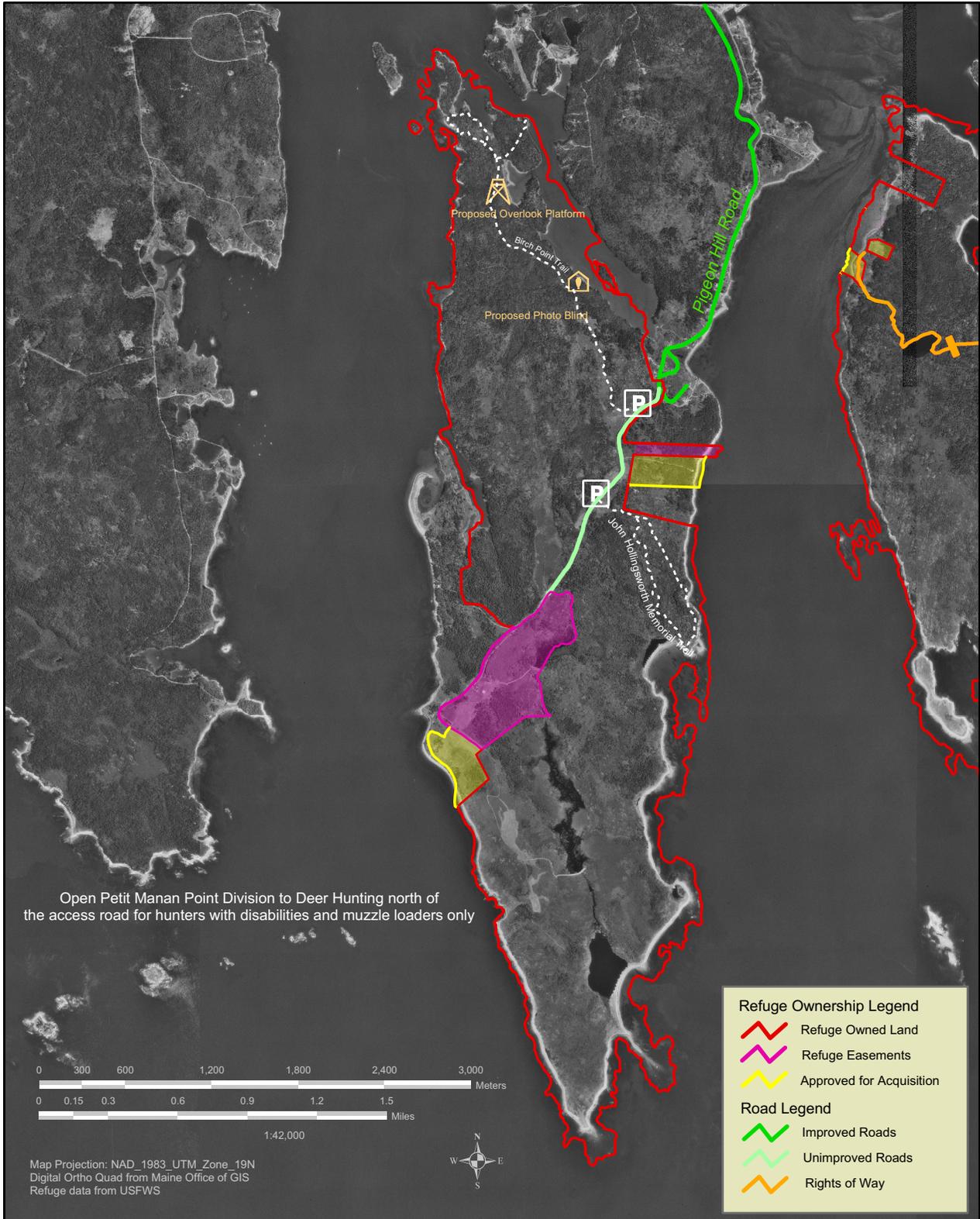


MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE  
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT  
Gouldsboro Bay Division Public Use  
Alternative C





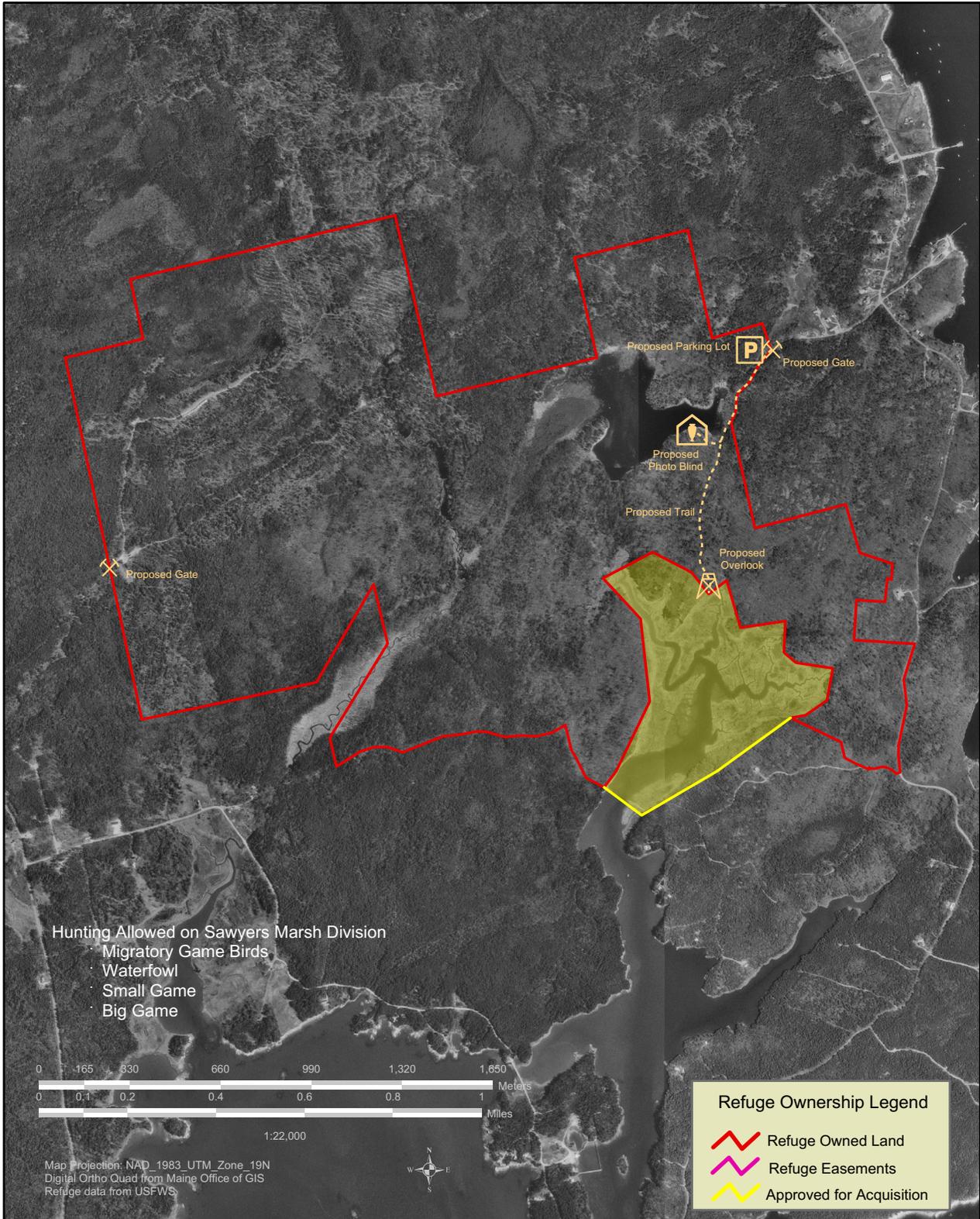
MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE  
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT  
Petit Manan Point Division Public Use  
Alternative C





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

Sawyers Marsh Division Public Use  
Alternative C



## Alternative D

### Introduction

This alternative represents a custodial or “passive management” approach to administering the Refuge and its resources. It is designed to maintain the islands’ current “natural and wild” character, similar to a wilderness area or an ecological reserve. This alternative minimizes human intrusions and intervention, except where necessary to protect threatened and endangered species, avoid catastrophic losses to current seabird populations on the Refuge, control invasive and exotic species, and enforce Refuge regulations.

Specifically, we designed this alternative to respond to the public scoping comments we received during our planning process which encouraged us to “let nature take care of itself” or “manage as a wilderness without officially designating it so.” This alternative also addresses those public comments requesting we close the islands to public access, remove all non-historic structures, and eliminate sheep grazing, hunting, lethal control of predators on seabirds, and the use of prescribed fire and herbicides.

We would reduce current management activities to focus on those that are necessary to meet minimum compliance requirements, including threatened and endangered species, human health and safety, and historic preservation. In general, we would manage vegetation only as necessary to control invasive or exotic species threatening the biodiversity of our Refuge islands and mainland divisions. Our tools would be limited to light mechanical or hand treatments. We would significantly reduce our management at seabird management projects, scaling back to only non-lethal gull management, such as destroying their nests before April when they lay eggs. We would eliminate sheep grazing, mowing, and prescribed burning as habitat management tools. We would reduce our monitoring of nesting seabirds to an annual census with one person assigned to management sites. Our other inventory and monitoring programs would be scaled back as well, as we would limit our efforts to only maintaining the MAPS

stations and continuing the baseline biological inventories on both the mainland and the islands.

This alternative would maintain the public use infrastructure on Petit Manan Point as described in Alternative A, but would not otherwise implement any public use programs that would encourage visitation on Refuge lands. Rather, our focus would be on off-site environmental education and interpretive programs. We would close all Refuge islands to public access, except when organized through a staff or partner-led tour, or operating under a special use permit. We would continue to provide commercial seabird tour boat operators with current information on island nests, and would



*Saltmarsh on Gouldsboro Bay Division*  
USFWS photo

pursue placing interpreters and interpretive displays on boats. We would eliminate hunting from all Refuge lands Maps 2-13 to 2-16 (pages 2-140 to 2-143) depict our existing and proposed infrastructure on the four mainland divisions.

We would continue to pursue Service acquisition from willing sellers of the 467 private acres within our approved boundary. No other Service land acquisition is proposed; however, we would continue to work with our partners to support their land protection efforts in coastal Maine.

Under Alternative D, no new infrastructure would be developed for any of our programs, but we would continue to maintain the administrative facilities we identify in Chapter 3. We would maintain the current staffing level; that is, eight permanent employees (see Appendix F), but this may be further reduced in the future through attrition. However, we would need to increase our outreach and law enforcement efforts using current staff to communicate the changes in management under this alternative.

We would increase our use of the local media, newsletters, and our Friends Group to reach local communities and look to partner with other Federal, State, and local law enforcement agencies to insure our regulations are adhered to. We would maintain a volunteer program and rely more on our partners to help us maintain our facilities, conduct biological inventories and monitoring, and organize our environmental education and interpretation programs. Our use of seasonal employees and interns would be limited.

Similar to Alternative A, we would not propose that any of the 13 islands meeting the minimum wilderness characteristics be recommended for inclusion in the National Wilderness Preservation System. Designation would require additional staff time and resources to plan and manage these islands to maintain their wilderness character, which we would not be prepared for under this alternative.

**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 (Upland Cover Types)**

Allow natural vegetative succession to occur on all Refuge mainland areas, intervening only when necessary to control invasive or exotic species threatening native vegetation.

*Background:* Under this objective, we would allow native, upland vegetation to grow unimpeded, except when levels of invasive or exotic species threaten the native biodiversity of the area. We would not expect our mature forested stands to change appreciably during the next 15 years. Rather, we would expect the most change to occur in our 70 acres of open field. Over the next fifteen years, this field would transition to a shrub-scrub field, with some interspersed birch, beech, maple, alder and aspen saplings. We would also expect the 235 acres of early successional forest-edge to transition into a young forest, pole-sized stand.

It is in the fields where we would expect undesirable levels of encroachment by invasive and exotic vegetation. When this occurs, we would use mechanical equipment or hand pulling to eliminate as many plants as possible. These treatments are very labor intensive and depending on the size of the area to be treated, would require significant use of volunteers and other partners to be effective. Fortunately, we do not currently have significant areas impacted. We would need to be diligent in our observations and monitoring of these areas to ensure invasive and exotic species do not gain a stronghold.

We would continue the seasonal Neotropical migratory landbird monitoring which is contributing to national and regional population trend studies.

*Strategies:*

- continue Petit Manan Point and Gouldsboro Bay divisions MAPS stations and Regional landbird surveys on all three mainland divisions according to established protocol. Continue respective surveys only as often as needed to monitor population trends confidently. Incorporate data into GIS database.

*Within 5 years of CCP implementation:*

- review and revise existing cover type maps for the mainland units and incorporate into a GIS database.
- in HMP, include strategies to manage invasive and exotic vegetation using mechanical or hand-pulling treatments only.

**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)**

Monitor saltmarsh and estuary areas to ensure they are not being lost or degraded by human-caused activities such as trampling, adjacent development, or pollution.

*Background:* Saltmarsh and estuaries are perhaps the most productive areas on the Refuge. They support more species than any other cover type, when you consider the number of vertebrate and invertebrate species that forage, nest, spawn, migrate through, or use them as nurseries. Numerous Federal trust resources, such as land birds, waterfowl, and shorebirds, rely on this habitat type for either nesting or migration. They also filter nutrients, waste, and sediment from upland runoff. These areas provide immensely valuable functions in the coastal ecosystem.

*Strategies:*

- continue to monitor these areas for degradation; observe for signs of trampling, adjacent construction or developments, and pollution.

**Objective 2.2 (Freshwater Impoundments)**

Same as Alternative A.

**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 Islands)**

Same as Alternative A, with the exception that islands would be closed to public use year round, except under special use permit.

**Objective 3.2 (Baseline Biological Inventories)**

Same as the baseline biological inventories in Alternative A, Objective 3.3.



*Bald eagle*

Photo courtesy of the Cornell Laboratory of Ornithology

**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)**

Monitor the saltmarsh on Cross Island to ensure it is not being lost or degraded by human-caused activities such as trampling, adjacent development, or pollution.

*Background:* As noted in Objective 2.1, coastal saltmarsh areas provide immensely valuable functions in the coastal ecosystem supporting an incredible diversity of vertebrate and invertebrate life.

*Strategies:*

- continue to monitor these areas for degradation; observe for signs of trampling, adjacent construction or developments, and pollution.

**Objective 4.2 (Intertidal Harvesting)**

Same as Alternative A.

**Goal 5: Protect and Restore Nesting Seabird Populations on the Refuge's Coastal Islands to Contribute to Regional and International Seabird Conservation Goals**

**Objective 5.1 (Seabird Nesting Islands)**

Protect current seabird population levels and their distribution on Refuge islands (using year 2000 population levels as a baseline), especially against controllable catastrophic losses.

*Background:* The number and geographic distribution of occupied seabird nesting islands has decreased significantly from historic levels (USFWS 2000). Expanding gull populations and recent increases in both recreational and developmental pressures along the coast of Maine are two factors that continue to limit the availability of suitable nesting islands.

Over 90% of common, Arctic, and roseate terns, and all laughing gulls and Atlantic puffins in Maine currently nest on nine managed (e.g. seasonally-staffed) seabird management 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 potential for a single catastrophic event to significantly affect Gulf of Maine seabird populations is enhanced by the fact the seabirds are nesting on a limited number of islands. It is therefore imperative that we protect these islands on the Refuge against any significant losses. Controlling the impacts from gulls and human development and disturbance would be the management emphasis under this alternative.

*Strategies:*

- continue to work cooperatively with NAS, Canadian Wildlife Service, and MDIFW in monitoring seabird populations on non-Service owned management sites.
- on Petit Manan Island, continue to map all active puffin and razorbill burrows, using GPS and incorporate into a GIS database; monitor their use of existing artificial burrows, but do not create additional ones.
- continue to observe and record food deliveries to individual burrows to help determine reproductive success of nesting alcids.
- continue to monitor nesting and loafing herring and black-backed gull distribution on the six managed islands; document presence and activities of color-banded gulls on Petit Manan Island.
- continue to actively manage gulls and other seabird predator populations on an annual basis, but limit methods to non-lethal techniques such as harassment and destruction of nests, if gulls, prior to their egg laying.
- continue to annually document and evaluate how often and how close tour boats come to nesting seabird 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 work with the FAA to have Refuge islands identified on flight charts so that pilots are alerted to the 2,000 ft-minimum recommended altitude over national wildlife refuges.
- continue to cooperate with NAS in monitoring Matinicus Rock and Petit Manan Island for laughing gull expansions; on Petit Manan Island continue to confine nesting laughing gulls to a five acre area (west of the boardwalk); use non-lethal methods of managing laughing gulls.

*Within 3 years of CCP implementation:*

- limit annual seabird monitoring on the six seabird management islands to pair counts only; no handling of birds, including banding of adults or chicks would occur. No new artificial nest boxes would be installed for roseate tern.
- in HMP, determine strategies to maintain nesting habitat for seabirds using mechanical or hand tools. No herbicides, prescribed fire, or sheep grazing would be employed.
- in HSIMP, develop monitoring strategies for invasive and exotic vegetation establishment on islands.

**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)**

Continue to support partner-led environmental education programs with field programs focused on the Refuge's mainland divisions.

*Background:* Environmental education programs can be very effective in establishing an appreciation for Refuge resources and communicating the importance of the Refuge as part of the National Wildlife Refuge System. Further, these programs are also important in showing how each individual can share in the stewardship of these important coastal resources by following certain conservation practices in their own lives and promoting them in their local communities.

Annually, we cooperate with the NAS and Damariscotta River Association in their classroom environmental education programs. We also have a partnership with the Chewonki Foundation and Hurricane Island Outward Bound School, who have established an environmental education program using Refuge lands. We currently issue a special use permit to the Humboldt Research Station (formerly Eagle Hill Institute) for an "outdoor laboratory" on the Refuge.

Under this alternative, we would continue to allow environmental education programs to be developed and led in the field by our partners under a special use permit; however, the majority of these would be on the Refuge

mainland divisions. Established island programs would be the exception. Also, we would not allow any infrastructure to be built to support these programs.

*Strategies:*

- continue to partner with the Chewonki Foundation, Damariscotta River Association, National Audubon Society, and Hurricane Island Outward Bound to conduct curriculum-based educational programs in classrooms and on Refuge lands.

**Objective 6.2 (Environmental Interpretation)**

Same as Alternative A, except for the following:

- islands are closed to public use year round; except for those programs operating under a special use permit.

**Objective 6.3 (Wildlife Observation and Photography)**

Same as Alternative A, except for the following changes to strategies (Maps 2-13 to 2-16 depict changes):

- islands are closed to public use year round; except those programs operating under a special use permit

**Objective 6.4 (Public Access to Refuge Islands)**

Restrict public access to Refuge islands to maximize protection of sensitive island resources, allowing access only through staff- or partner-led programs under a special use permit.



*Alcids on Petit Manan Island*  
USFWS photo

*Background:* Under this alternative, the islands are managed as ecological reserves, with minimal human impact and intervention. There would be exceptions to the public closures, as noted in objectives 6.1, 6.2, and 6.3, to conduct a limited number of programs operating only under special use permit.

*Strategies:*

- islands are closed to public access year round; except for those programs operating under a special use permit
- Halifax and Bois Bubert islands would be closed to camping year round.

**Goal 7: Protect the Integrity of Coastal Maine Wildlife and Habitats through an Active Land Acquisition and Protection Program**

**Objective 7.1 (Service Land Acquisition)**

Continue Service acquisition of significant Maine coastal habitats from willing sellers within our currently approved boundaries.

*Background:* As we described in the land protection discussion in Chapter 2, “Actions Common to All Alternatives,” all alternatives include, at a minimum, continued Service acquisition of lands from willing sellers within the currently approved Refuge boundary. At present, we have approval to acquire 467.1 acres total, consisting of two tracts (25 acres) on Petit Manan Point Division; one tract (95 acres) on the Sawyers Marsh Division; and 25 tracts on 14 islands (347.5 acres). 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.

Strategies:

- continue to acquire private lands from willing sellers within currently approved acquisition boundaries; tracts on 14 islands (347.5 acres) and 120 acres of mainland are approved. All lands acquired would become part of the Petit Manan Refuge.
- continue to participate in annual coordination meetings 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 the nationally significant island list is updated.

**Objective 7.2 (Cooperative Protection and Management of Islands)**

Same as Alternative A.

**Objective 7.3 (Cooperative Protection and Management of Important Mainland Habitats)**

Same as Alternative A.

**Objective 7.4 (Archeological and Historic Resources)**

Same as Alternative A.

**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)**

Same as Alternative B.

**Objective 8.2 (Law Enforcement Partnerships)**

Same as Alternative B.

**Objective 8.3 (Community Outreach)**

Same as Alternative B.

**Objective 8.4 (Elected Officials Outreach)**

Same as Alternative B.

**Objective 8.5 (Adjacent Landowner Outreach)**

Same as Alternative B.



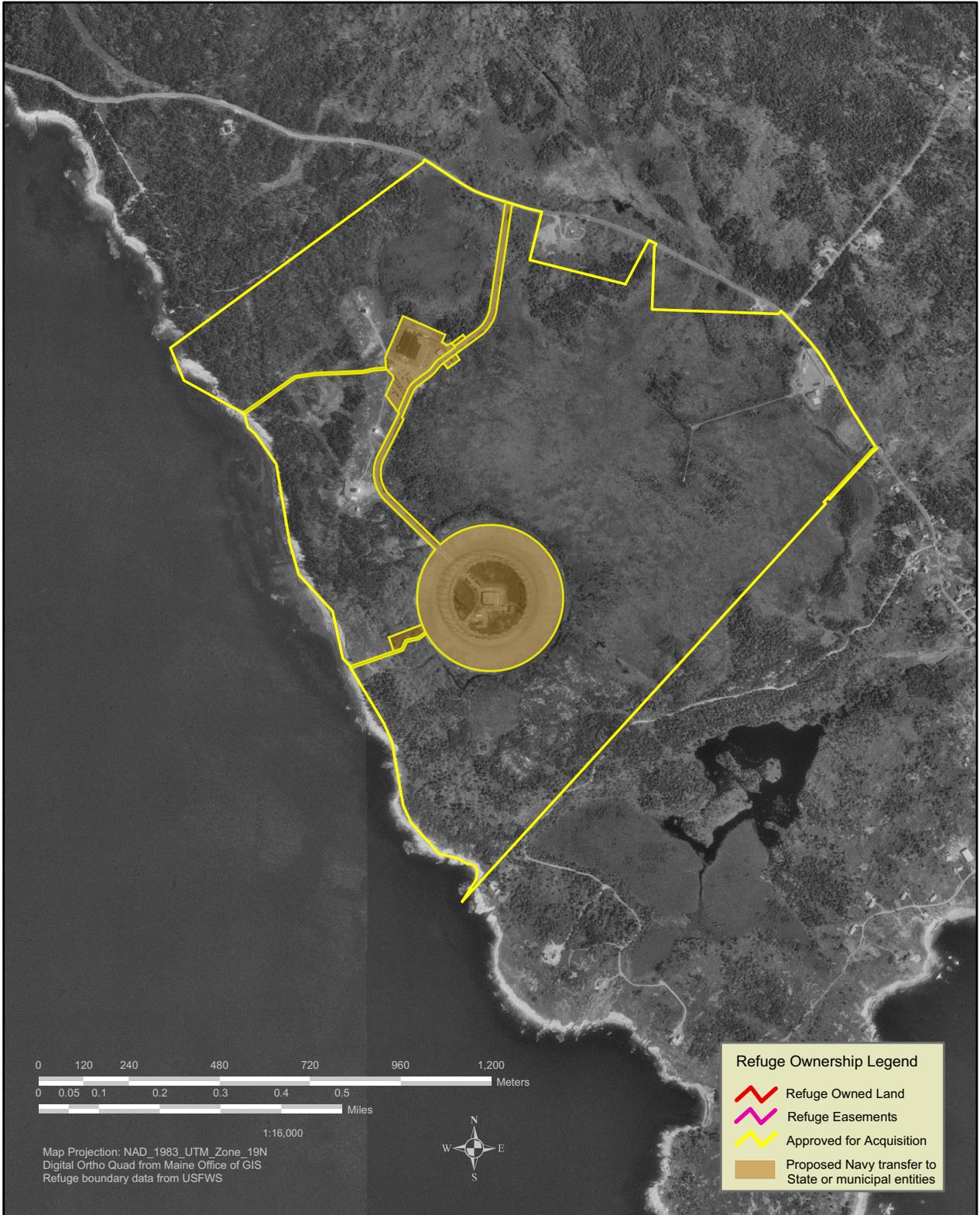
*Black guillemots*  
USFWS photo



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

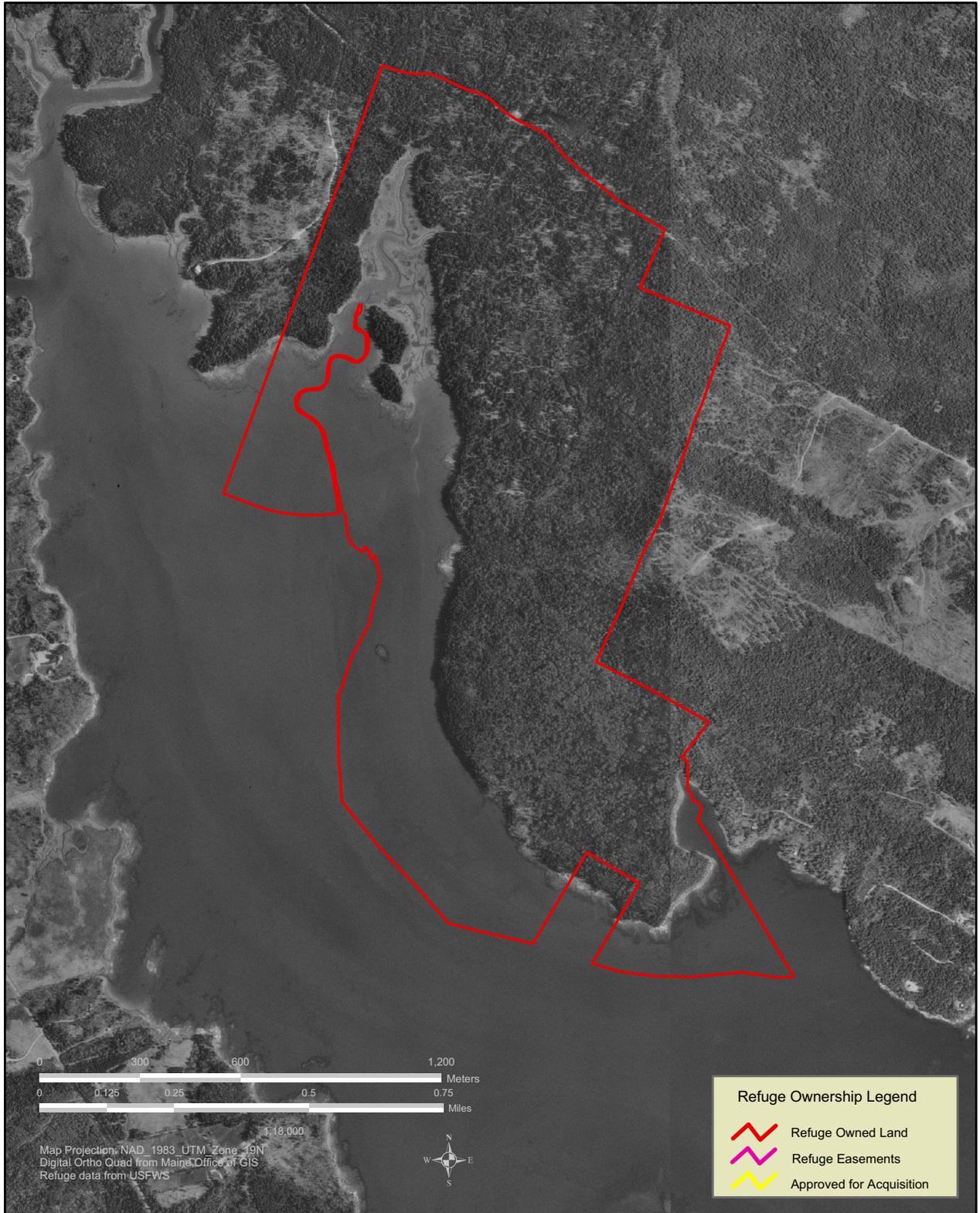
Corea Heath Division Public Use

Alternative D



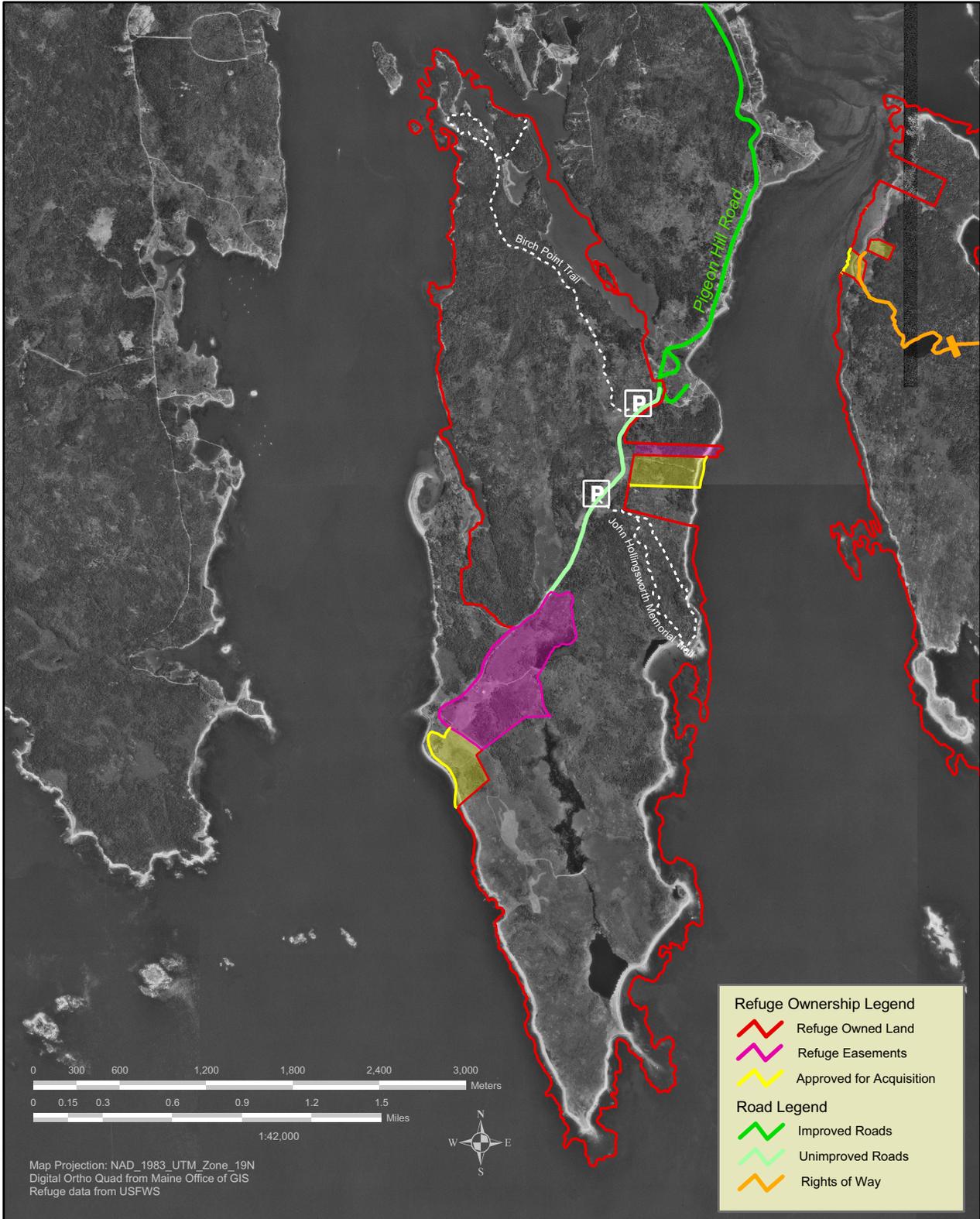


MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE  
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT  
**Gouldsboro Bay Division Public Use**  
Alternative D



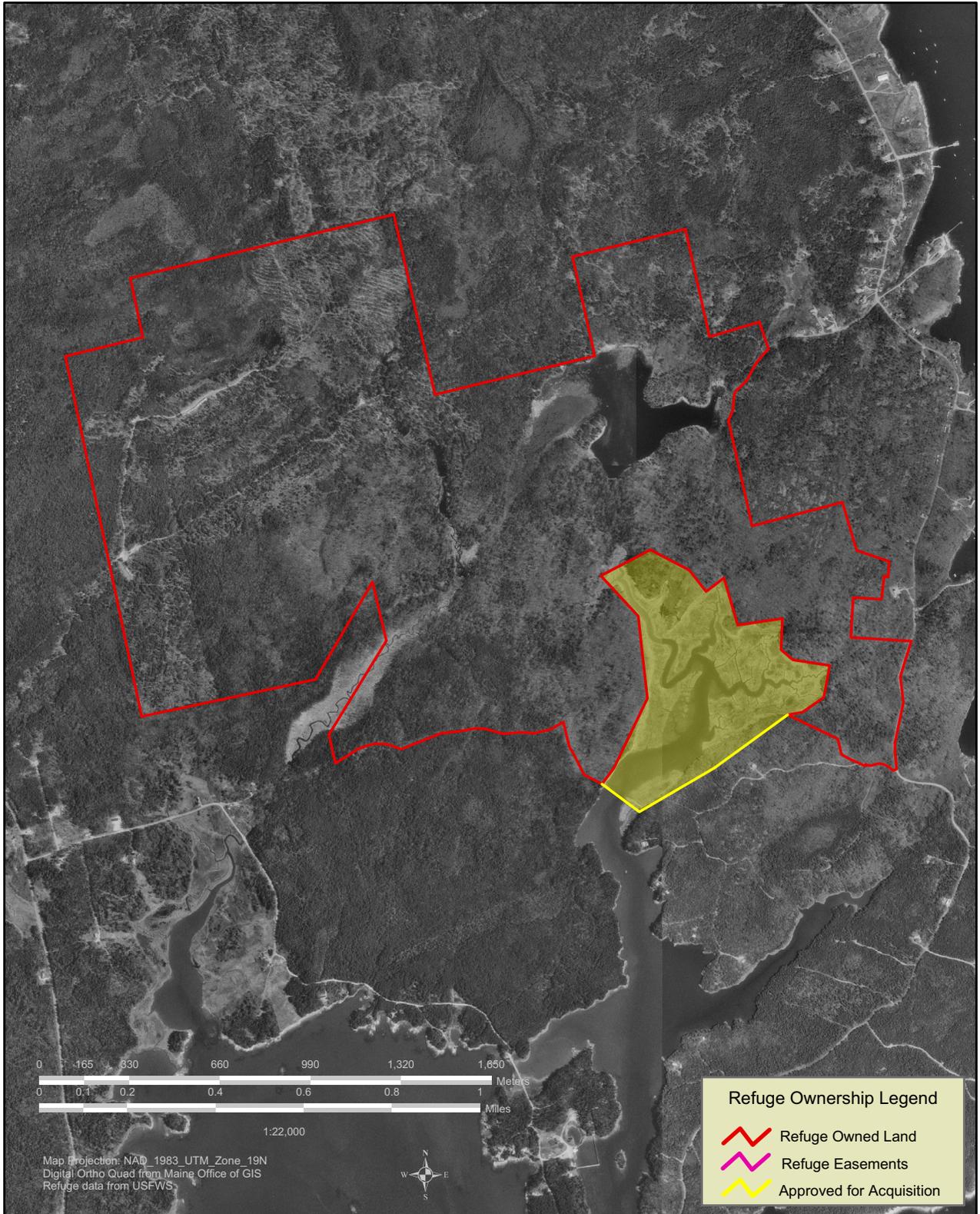


MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE  
COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT  
Petit Manan Point Division Public Use  
Alternative D





**MAINE COASTAL ISLANDS NATIONAL WILDLIFE REFUGE**  
**COMPREHENSIVE CONSERVATION PLAN AND ENVIRONMENTAL IMPACT STATEMENT**  
**Sawyers Marsh Division Public Use**  
Alternative D



## Comparison of Actions by Alternative As they Relate to Issues

Table 2-1 compares and contrasts important management actions and strategies by alternative. Earlier in this chapter we presented the actions common to all alternatives. This table, however, emphasizes the differences among the alternatives. In addition, we show which actions address the issues identified in Chapter 1. These same actions are also found throughout Chapter 2 under the respective goal and objectives statements.

Unless otherwise noted, all actions are to be initiated within the 15 year CCP planning horizon, with the Refuge staff as the lead responsible party.

**Table 2-1 Comparison of Management Actions by Alternative**

<b>Issue 1. How will we protect coastal nesting islands in the Gulf of Maine, given the finite number of islands suitable for seabird, wading bird, and bald eagle nesting?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Manage the 43 islands that are part of the Refuge; 37 are owned by the Service in fee title, 5 in conservation easement, and 1 under a Memorandum of Understanding (MOU) with the State of Maine.</p> <p>Coordinate with the Services's Gulf of Maine Program Office (GOMP) to identify nationally significant coastal nesting islands in need of permanent protection (currently 151 identified)</p> <p>Continue to pursue acquisition of lands from willing sellers within the currently approved Refuge boundary. This includes 14 islands (347.5 acres) and 3 mainland tracts (119.6 acres).</p> <p>Continue to pursue the no-cost transfer of Corea Heath tract within the currently approved Refuge boundary.</p> <p>Seek approval and pursue acquisition of 30 additional nationally significant coastal nesting islands(see Table 2.2) and 153.3 acres of mainland over the next 15 years. This expansion assumed funding levels remain similar to recent years.</p>	<p>Continue to manage the 43 islands that are part of the Refuge.</p> <p>Continue coordination with the Services's Gulf of Maine Program Office (GOMP) to identify nationally significant coastal nesting islands in need of long-term protection (currently 151 identified)</p> <p>Continue to pursue acquisition of lands from willing sellers within the currently approved Refuge boundary. This includes 14 islands (347.5 acres) and 119.6 acres of mainland in 3 tracts.</p> <p>Continue to pursue the no-cost transfer of Corea Heath tract within the currently approved Refuge boundary.</p> <p>Acquire up to 87 additional nationally significant islands (2,306.4 acres; see Table 2.2) and 153.3 acres of mainland in need of permanent protection according to Land Protection Plan (Appendix A), if available from willing sellers.</p> <p>Work with conservation partners, as opportunities arise, to support their protection and acquisition of the remaining 64 nationally significant islands.</p>	<p>Expand Alternative B to include the following:</p> <p>Acquire all, or portions of, 151 nationally significant islands in need of long term protection (see Table 2.2). Portions of large islands (&gt;200 acres) may be all that is needed to provide protection of bald eagle nesting sites. Given this consideration, approximately 6,310 acres is targeted for Service acquisition from willing sellers.</p> <p>This alternative assumes currently unprotected nationally significant islands are best served by Service ownership. It also assumes a significant increase in Refuge funding and staffing.</p> <p>Staff involvement in outreach to island owners would dramatically increase.</p>	<p>Continue to manage the 43 islands that are part of the Refuge.</p> <p>Continue to pursue acquisition of 14 islands and 119.6 acres of mainland from willing sellers within the currently approved Refuge boundary, similar to Alternative A, and the Corea Heath tract as a transfer within the currently approved boundary.</p> <p>No new land expansion is proposed.</p> <p>This alternative assumes nationally significant islands are best served by conservation partner ownership. The Service would, however, continue to identify important islands needing protection and assist partners in seeking funding options.</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<b>Issue 2: How will we deal with increased recreational and commercial activities on or near Refuge islands?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>At kiosks, our offices, and in conjunction with other programs, provide information to public on responsible uses of islands.</p> <p>Meet with MITA 2 - 3 times/year to support their efforts to control and manage islands throughout the Maine coast, and their Island Stewardship Program.</p> <p>Meet annually with seabird tour boat operators to provide information on "best operating procedures."</p> <p>Provide tour boat operators with Refuge brochures and updated management and biological information.</p> <p>Monitor tour boat operations and resource harvesting in intertidal zones of Refuge islands.</p> <p>Work with partners to monitor aquaculture facilities near "nationally significant" islands and Refuge islands.</p> <p>On seasonally staffed seabird nesting islands, document public use in the intertidal zone and the response of nesting seabirds.</p>	<p>In addition to Alternative A:</p> <p>Coordinate annually with ME DMR, Corps of Engineers , MDIFW, MITA, and NPS through GOMSWG, or other forum, to identify and address potential threats to nesting seabirds from commercial industries and recreational uses. Specifically, establish monitoring program on proposed and existing aquaculture facilities near nationally significant islands and in areas frequented by inter-tidal harvesters. Involve commercial aquaculture and recreational representatives in developing and implementing best management practices.</p> <p>Hire summer interns or volunteers to interpret Refuge resources on commercial tour boats. Explore option of funding positions with a share of tour boat profits. Place interpretive panels on tour boats and in tour boat offices.</p> <p>Establish formal Island Stewardship program with MITA or other partners, with the goal of covering 5 Refuge islands. Involve volunteers, similar to existing programs on Roberts, Little Thrumcap, Inner White, and Outer White Islands. Highest priority would be establishing a program on Halifax Island.</p>	<p>In addition to Alternative B:</p> <p>Conduct an annual workshop for kayak guides and outfitters, focusing on responsible uses of coastal islands.</p> <p>Design and sponsor research to determine the short and long term effects from aquaculture and intertidal resource harvesting on the entire island ecosystem.</p>	<p>Same as Alternative A</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<i>Issue 3: How will our management activities affect public access to the Refuge's coastal nesting islands?</i>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Continue to allow the following three non-nesting islands to remain open year round for day use, assuming no sensitive areas, species, or habitats of concern become established: Cross, Scotch, and Bois Bubert islands.</p> <p>Continue to allow approximately 1/4 of Halifax Island to be open for day use; most is closed (and marked) to protect botanical resources.</p> <p>Continue seasonal closures to public access on all seabird nesting islands from April 1 to August 31.</p> <p>Continue seasonal closure to public access at active bald eagle nesting sites from February 15 to August 31.</p> <p>Continue seasonal closures at historical eagle nesting sites from Feb. 15 to May 15 to encourage re-nesting. On May 15 each year, determine whether eagle activity warrants an extended closure.</p> <p>Continue to maintain year round closure on Seal Island due to unexploded ordnance and concerns with public safety.</p> <p>Continue to allow camping on Bois Bubert and Halifax islands as part of the Maine Islands Trail.</p> <p>Access to newly acquired Refuge islands is evaluated on a case-by-case basis, but generally follows the guidelines above.</p>	<p>In addition to Alternative A:</p> <p>Post interpretive and regulatory signs on all Refuge islands. Work with other island owner partners to try to standardize regulatory signs to extent possible.</p> <p>Hire at least 2 Park Rangers to patrol Refuge islands.</p> <p>Implement Leave No Trace program; develop and implement monitoring protocols.</p> <p>Establish an formal Island Stewardship program on at least 5 Refuge islands in cooperation with MITA and other conservation partners.</p> <p>Modify public access closures on eider or gull-only nesting islands to April 1 to July 31. These dates conform more closely to State-owned island closures.</p> <p>Camping on Bois Bubert and Halifax islands would continue under permit-reservation, but only with cooperative planning and implementation by MITA, ME Bureau of Parks &amp; Lands., and other partners. With partners establish a monitoring program to identify threshold impact limits for island usage and limits of acceptable change to ensure there is no site deterioration from current use. For example, vegetation and soil erosion both inside and outside of designated camping areas would be monitored on a regular basis as agreed to by the partners.</p> <p>In conjunction with Visitor Services Plan, evaluate opportunities on select islands for on-island seabird viewing where compatible. Also develop Refuge policy on island visitation to insure consistency in management.</p>	<p>Same as Alternative B, except:</p> <p>Evaluate each island separately to determine the most effective public access closure period for protecting species nesting there. Closure periods may vary from the currently used Feb. 15 to August 31 dates, if appropriate.</p> <p>This approach necessitates an extensive signage program, intensive outreach and partnership coordination effort, and monitoring of public use to ensure effective implementation.</p> <p>Implement additional island closures as necessary to protect sensitive areas (vegetation or other species or habitats of management concern). Groups of 6 or more for day-use will need to obtain a permit.</p> <p>Allow camping to continue under conditions identified in Alternative B.</p>	<p>Close all Refuge islands to general public access year round. Islands would be managed to minimize human intervention and presence.</p> <p>The only public access would be through staff- or partner-led programs or organized under special use permits.</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<i>Issue 4: How will we manage Refuge habitats to protect endangered, threatened, and other species of management concern?</i>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Continue to manage 6 existing seabird restoration projects on Refuge lands and participate in management of 4 other islands with NAS, including bird censuses, vegetation management, lethal and non-lethal predator management, and controlling access to minimize disturbance.</p> <p>Vegetation management to benefit nesting seabirds would continue to occur on 3 Refuge islands and includes use of mechanical, chemical, fencing, sheep grazing, and prescribed fire treatments.</p> <p>Continue to manage 70 acres of open field on Petit Manan Pt Division to maintain habitat diversity and to benefit nesting landbirds of concern. Use mechanical, chemical, and prescribed fire techniques as needed.</p> <p>Up to 55 acres/year could be burned to meet habitat objectives</p> <p>Continue to manage the 3 freshwater impoundments on Petit Manan Pt Division for migratory waterfowl.</p> <p>Continue to protect the 4 active bald eagle sites from habitat loss or human disturbance.</p>	<p>In addition to Alternative A:</p> <p>Complete an HMP for the Refuge within one year. As a priority, develop strategies for achieving high quality seabird nesting habitat. Evaluate sheep grazing as a vegetation management tool, in addition to mechanical, chemical, burning, fencing, and predator management strategies.</p> <p>Up to 110 acres/year could be burned to meet habitat objectives.</p> <p>With development of Refuge HSIMP, establish protocol to evaluate not only the number of seabirds responding to habitat restoration, but also the overall species composition and distribution. Adapt management to monitoring results.</p> <p>Establish 6 new seabird restoration projects, in cooperation with partners, and enhance existing 6 seabird restoration sites (12 sites total). The overall objective with new restoration sites is to maintain or increase species diversity at individual sites, increase productivity and fledging rates, and improve the overall distribution of nesting seabirds in the Gulf of Maine. New sites will be identified as new islands are acquired.</p> <p>Develop individual seabird restoration plans for each new project site.</p> <p>Implement strategies to enhance nesting habitat for Leach's storm-petrels.</p> <p>Initiate common murre attraction program on additional Refuge islands when determined feasible.</p>	<p>Same as Alternative B, except:</p> <p>Initiate 12 new seabird restoration projects (18 sites total), involving a significantly increased partnership effort, in conjunction with new island acquisitions where potential has been identified.</p> <p>Develop individual, island-specific HMPs, establishing population and habitat management goals and objectives for not only seabirds, but other species/habitats of concern as well. Management efforts would focus on providing habitat diversity.</p> <p>Up to 250 acres/year could be burned to meet habitat objectives.</p> <p>Work with private landowners of coastal nesting islands to promote their efforts to protect &amp; restore nesting seabirds, wading birds, and eagles.</p> <p>Develop and initiate monitoring protocol to ascertain sustainability of rare plant communities based on earlier inventory efforts. Design and implement habitat enhancement or restoration as warranted.</p>	<p>Eliminate herbicide use, sheep grazing, and mowing. Burning will be limited to less than 5 acres/year namely to reduce fire hazards, eliminate brush piles, or to maintain boundaries.</p> <p>Complete a Refuge HMP emphasizing a "custodial" low-intervention management approach.</p> <p>Decrease management intensity at the 6 existing seabird restoration projects. Primarily, management is limited to non-lethal gull control for seabird nesting site protection.</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<b>Issue 5: How will we control the impacts of predators on species of management concern on Refuge lands?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Conduct gull control ( non-lethal and infrequently, lethal), in association with the 6 seabird restoration projects, to minimize nest competition and predation from gulls on nesting seabirds.</p> <p>Conduct mammalian and avian predator control ( non-lethal and lethal) on selected islands where these predators are adversely affecting seabird nesting success and survival.</p>	<p>In addition to Alternative A:</p> <p>Increase predator control activities commensurate with the increased number of islands acquired and the 6 new seabird restoration projects. Techniques would be similar to Alternative A, including lethal and non-lethal control of mammalian and avian predators on nesting seabirds.</p> <p>Initiate predator control efforts on non-staffed islands as appropriate.</p>	<p>In addition to Alternative A:</p> <p>Increase predator control activities commensurate with the increased number of islands acquired and the 12 new seabird restoration projects. Techniques would be similar to Alternative A, including lethal and non-lethal control of mammalian and avian predators on nesting seabirds.</p> <p>Initiate predator control efforts on non-staffed islands as appropriate.</p>	<p>Use only non-lethal techniques for predator control.</p>
<b>Issue 6: How will we manage sheep grazing on Refuge lands?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Work with landowners to ensure sheep grazing on Refuge lands (Metinic and Nash Islands; where the Service only owns portions of the islands) is not adversely affecting nesting seabirds.</p> <p>Monitor vegetation plots in sheep exclosures, comparing grazed vs. ungrazed areas and effects on nesting habitat quality.</p> <p>Use exclosure fencing, where appropriate, to protect active seabird nesting colonies from disturbance and trampling by sheep, and to provide cover for nesting. Evaluate effectiveness of fencing.</p>	<p>In addition to Alternative A:</p> <p>Complete special use permit with sheep owners on Metinic and Nash islands. Objective would be to use sheep to manage vegetation at seabird nesting sites. Experiment with timing and intensity of grazing, and fencing. An adaptive management approach is necessary due to the unique situation (getting equipment on island, timing of treatments needed, tradition of grazing, and shared ownership of the islands).</p> <p>Develop Refuge HMP with specific objectives and strategies for vegetation management on coastal islands, including sheep grazing.</p> <p>With development of the Refuge HSIMP, establish monitoring and evaluation protocol to determine effects of grazing on nesting seabirds, soils, and plant species composition, density, and structure. Establish thresholds of acceptable change to resources. Evaluate effectiveness within 5 years of CCP approval.</p>	<p>Same as Alternative B.</p>	<p>Discontinue sheep grazing on Refuge lands.</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<i>Issue 7: How will we manage non-native invasive and exotic species on Refuge lands?</i>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Conduct baseline inventories of Refuge lands to identify occurrence and abundance of invasive plants (2 islands per year). Limited use of mechanical, chemical, and prescribed burning treatments would continue to control their spread.</p>	<p>Complete a Refuge HMP including strategies for mapping and managing invasive and exotic species.</p> <p>Expand baseline inventories of Refuge lands to at least 6 islands per year. Target identification and mapping of invasive and exotic species and develop integrated management plan to include biological, prescribed fire, mechanical, and limited herbicide treatments as warranted.</p>	<p>Conduct baseline inventories for all Refuge lands, with follow-up monitoring every three years.</p> <p>Aggressively eradicate invasive species, using mechanical and chemical means and burning. Actively restore native vegetation to control sites.</p> <p>Develop island-specific habitat management plan which address non-native invasive and exotic species occurrence and focus on protection of rare plant communities.</p>	<p>Use limited mechanical intervention or hand-pulling only to control invasive species.</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<i>Issue 8: How will we effectively monitor and inventory wildlife populations and habitats on the Refuge?</i>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Hire 18 seasonal researchers (May 15 - Aug. 15) each year, including Service- and partner-funded biotechs, to monitor seabird nesting. Use researchers to also document use by neotropical migrants.</p> <p>Hire 1 seasonal researcher to do landbird and marsh bird surveys on Refuge mainland units.</p> <p>Survey Refuge islands for nesting bird species diversity on a 5-year cycle.</p> <p>Hire seasonal researcher to do breeding bird survey and fund avian research project (MAPS) on Petit Manan Point, Sawyers Marsh and Gouldsboro Bay divisions.</p> <p>Maintain cover type mapping on large islands and mainland divisions.</p> <p>Continue to support biological surveys conducted by volunteers or researchers.</p> <p>With MDIFW, NPS, and private researchers, conduct winter shorebird surveys along the coast.</p>	<p>In addition to Alternative A:</p> <p>Develop cover type maps for all mainland properties.</p> <p>Complete HSIMP to establish baseline information needs, prioritize projects, and develop an implementation schedule. Utilize established Service, TNC and MDIFW monitoring protocols.</p> <p>Develop partnerships, specifically with universities, USGS, and MDIFW, to facilitate research on Refuge lands.</p> <p>Expand baseline floral and faunal island inventories to at least 6 islands/year.</p> <p>Conduct intensive surveys on at least 3 islands each year specifically to determine use by landbirds, shorebirds and raptors during spring and fall migrations. Hire seasonal researchers or contractors as necessary.</p>	<p>In addition to Alternative B:</p> <p>Work with partners to develop inventory &amp; monitoring protocols for burrow-nesting species, e.g., Leach's storm-petrels &amp; alcids.</p> <p>Coordinate with the NMFS and MDMR to evaluate status of and identify threats to coastal fishery populations that support species of conservation concern.</p> <p>Coordinate with NMFS and Univ. of Maine to document use and distribution of marine mammal haul-out &amp; pupping locations on Refuge islands.</p> <p>Initiate major effort to conduct baseline floral inventories of all Refuge properties; attempt at least 12 islands/year.</p> <p>Initiate research and monitoring efforts on intertidal and marine habitats surrounding Refuge lands. Efforts would focus on factors influencing productivity and survival of species of concern.</p>	<p>Establish priorities for baseline inventory needs and determine an implementation schedule.</p> <p>Attempt to conduct baseline floral and faunal inventories on at least 2 Refuge islands/year.</p> <p>Conduct seabird pair counts only on the 6 Refuge islands that are currently part of intensive seabird restoration project.</p> <p>Partner with land trusts, LE agencies, adjacent landowners, and volunteers to monitor Refuge lands.</p> <p>Continue MAPS station monitoring on mainland divisions.</p> <p>Review and revise cover type maps bi-annually.</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<i>Issue 9: How will we build partnerships to protect coastal wildlife and habitats and support priority, wildlife-dependent public uses?</i>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Maintain strong island protection and partnership with the Service's GOMP, MDIFW, TNC, MCHT, local land trusts, and private landowners.</p> <p>Coordinate with interagency Maine Wetlands Coalition to identify priority mainland coastal wetlands for protection by Service and other conservation partners.</p> <p>Maintain environmental education partnerships with Chewonki Foundation, Damariscotta River Association, National Audubon Society, and Hurricane Island Outward Bound School.</p> <p>Continue to support and encourage the Refuge Friends of Maine Seabird Islands group.</p> <p>Maintain informal Island Stewardship Program with Maine Island Trail Association (MITA) on 5 Refuge islands.</p>	<p>In addition to Alternative A:</p> <p>Maintain, or establish new, MOU's with universities and colleges, the NPS (NPS), NAS, Humboldt Research Station, MDIFW, other Service programs, and other partners to cooperatively accomplish biological and human dimensions monitoring, inventorying, and research needs.</p> <p>Explore opportunities to partner on Coastal Education Center in the mid-coast area. Partner with universities and colleges to create internship program for students to work at Coastal Education Center or in field programs for a semester.</p> <p>Conduct regular briefings with Congressional offices, including annual trips to Capitol Hill.</p> <p>With MITA or other partners, establish a formal Island Stewardship Program on 5 new Refuge islands.</p> <p>Expand the Refuge Friends group by adding a second chapter.</p> <p>Partner with tour boat companies to hire a summer interns or volunteers to provide interpretation on tour boats viewing Refuge. Produce interpretive panels to be displayed in tour boat offices or on boats.</p> <p>Establish formal relationship (MOA or MOU) with Friends of Nash Island Lighthouse. Also establish a Friends Group for lighthouses on Two Bush, Egg Rock, and Libby islands.</p>	<p>In addition to Alternative B:</p> <p>Expand the Refuge Friends group further by adding a third chapter.</p>	<p>Coordinate with interagency Maine Wetlands Coalition to identify priority wetlands in need of protection by conservation partners.</p> <p>As opportunities arise, establish MOU's with local universities and colleges to cooperate in baseline inventories and monitoring.</p> <p>Partner with land trusts, LE agencies, adjacent landowners and volunteers to monitor Refuge lands.</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<b>Issue 10: How will we improve communications, raise the visibility of the Service and the Refuge System, and build working relationships with local communities?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Give talks and Refuge slide presentations to local organizations upon request.</p> <p>Participate in special local events including fairs, sporting shows, and festivals.</p> <p>Issue occasional news releases and conduct interviews with media; prepare bi-weekly column in Rockland's Free Press.</p> <p>Sustain and improve volunteer program at the Refuge headquarters.</p> <p>Distribute Refuge brochures to chambers of commerce, welcome centers along Maine coast.</p> <p>Support the Friends of Maine Seabird Islands group in Rockport</p> <p>Maintain Refuge website with basic information on resources and opportunities.</p> <p>Continue to pursue site for a mid-coast Refuge Headquarters and Coastal Education Center with NAS and MAS as partners.</p>	<p>In addition to Alternative A:</p> <p>Expand volunteer programs at the Refuge Headquarters and Rockport offices. Use volunteers to help with outreach and informational programs.</p> <p>Publish a quarterly newsletter.</p> <p>Hire a summer interns for outreach, education, and interpretation on Refuge's mainland divisions.</p> <p>Expand the Friends Group to a second chapter downeast.</p> <p>Develop a Refuge Complex video for use at off-site events.</p> <p>Install Refuge System/Refuge interpretive panels at 3 coastal rest areas.</p> <p>Purchase a new phone system with voice mail menu that allows public access to regulations, upcoming events, current information of interest.</p> <p>Conduct annual briefings with Congressionals to discuss Refuge programs.</p> <p>Hold annual field visits for elected officials and community leaders.</p> <p>Meet with adjacent landowner associations.</p>	<p>In addition to Alternative B:</p> <p>Obtain AM radio frequency for visitors to tune into for current information, regulations, or upcoming events.</p> <p>Install up to 6 Refuge System/Refuge interpretive panels at coastal rest areas, and install 3 at Maine State Tourism Centers.</p>	<p>Same as Alternative A</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<b>Issue 11: How will we provide and maintain quality environmental education and interpretation programs on the Refuge?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Maintain kiosks on Petit Manan Point Division and trail interpretation signs on Hollingsworth Memorial Trail.</p> <p>Conduct 2-to-3 staff- and volunteer-led programs on Refuge and partner lands.</p> <p>Meet annually with Bar Harbor-based seabird tour boat operators, provide them with information to distribute; provide weekly updates of nesting seabird activities.</p> <p>Recruit and train volunteers to run programs.</p> <p>Cooperate with NAS and Damariscotta River Association to develop materials and ensure the Service's messages are shared.</p> <p>Continue special use permit with Humboldt Research Station, using Refuge lands as an outdoor laboratory and classroom.</p> <p>Maintain partnerships with Chewonki Foundation, Hurricane Island Outward Bound School, and local schools to conduct field-based environmental and education programs.</p> <p>Pursue Coastal Education Center in mid-coast area with partners (see Issue 10) .</p>	<p>In addition to Alternative A:</p> <p>Develop Visitor Services Plan; establish protocols to monitor and evaluate the quality of programs and visitor satisfaction.</p> <p>Create accessible interpretive trails at Gouldsboro Bay, Sawyers Marsh, and Corea Heath divisions.</p> <p>Conduct school programs during Migratory Bird Day and NWRS Week.</p> <p>Conduct at least 1 Teacher workshop each year; develop environmental curriculums for teachers to use in classrooms, or for trips on the Refuge.</p> <p>Hire interns or volunteers to interpret on seabird tour boats; produce interpretive panels for tour boats and launch sites.</p> <p>Hire 3 additional outdoor recreation planners and at least two interns to implement programs.</p> <p>Enhance interpretation on the Birch Point Trail; develop at least one overlook with interpretive panels.</p> <p>Establish a partnership with NPS Schoodic Point facility to assist in their Learning Facility.</p> <p>Install interpretive signs on Halifax Island to raise awareness of rare plants.</p> <p>Install Refuge interpretive panels at 3 rest areas along coastal highway.</p> <p>Evaluate opportunities on select islands for on-island seabird viewing, where compatible. Include in Visitor Services Plan.</p>	<p>In addition to Alternative B:</p> <p>Hire at least 2 summer interns to provide programs on the Refuge's mainland divisions.</p> <p>Install Refuge interpretive panels on 3 additional rest areas along the coast, and 3 in Maine State Tourism Centers.</p> <p>Develop a program to live-feed a video broadcast to the website of puffins in their burrows or a view of the seabird colony from Petit Manan Light. Include a curriculum that could be used by students worldwide. Research data would also be posted on the site, and students would be led through lessons using the data.</p>	<p>Maintain existing interpretive infrastructure (trails and kiosks on Petit Manan Point), but there would be no expansion of interpretive opportunities.</p> <p>Conduct staff- or partner-led environmental education and interpretation programs on the mainland outside of sensitive nesting periods.</p> <p>Post all Refuge islands, with signs visible from the water, to identify that islands are closed to public use year round.</p> <p>Pursue Coastal Education Center in mid-coast area with partners (see Issue 10) .</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<b>Issue 12: How will we provide and maintain quality programs for wildlife observation and photography?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Mainland and island units are open, or seasonally open, to wildlife observation and photography. Access restrictions are noted in Issue 3.</p> <p>Manage tour boat operations to Machias Seal Island under Refuge special use permit. Coordinate annually with tour boat operators and Canadian Wildlife Service officials.</p> <p>Conduct occasional meetings with tour boat operators visiting Cross and Petit Manan islands. Provide weekly updates on status of nesting seabirds on Petit Manan Island to all tour boat companies visiting the island.</p> <p>Allow commercial photographers access to closed areas under special use permit.</p> <p>Use volunteers, interns, and electronic trail counters to intermittently monitor trail and road usage on Petit Manan Point division to determine levels and timing of use.</p>	<p>In addition to Alternative A:</p> <p>Develop Visitor Service Plan including strategies to evaluate the quality of programs, visitor satisfaction, and to establish capacities and thresholds for resource impacts.</p> <p>Restrict commercial filming to only those that provide a direct benefit to the Service. Issue a special use permit.</p> <p>Establish new trails to facilitate wildlife observation at the Gouldsboro Bay, Sawyers Marsh, and Corea Heath divisions, including observation platforms at Gouldsboro Bay and Corea Heath.</p> <p>Promote wildlife observation and photography especially on the Petit Manan Point Division through the development of brochures and other media. Direct visitors to this area because of the infrastructure provided, the diversity of habitats, and the greater likelihood of observing wildlife.</p>	<p>In addition to Alternative B:</p> <p>Evaluate compatibility of opening Petit Manan Island and other select Refuge islands to photo blind tours (similar to Machias Seal Island)</p> <p>Develop a live-feed video broadcast to the website focused on one or more seabird nesting sites. This would allow anyone with internet access to view these birds remotely.</p> <p>Construct 2 or more photo blinds on mainland divisions.</p>	<p>Same as Alternative A, except for the following:</p> <p>Islands would be closed to general public access year round except under special use permit or by staff- or partner-led programs.</p>
<b>Issue 13: How will we provide and maintain high quality hunting opportunities?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Maintain current hunt program for the Refuge which includes:</p> <p>Migratory game birds and waterfowl, and small and big game on Sawyer's Marsh and Gouldsboro Bay Divisions.</p> <p>White-tailed deer hunting on Bois Bubert Island.</p> <p>Migratory waterfowl hunting on 22 Refuge islands.</p> <p>Islands acquired by the Service in the future would be open to waterfowl hunting unless resource, administrative, or safety concerns become known and the activity is not compatible.</p>	<p>In addition to Alternative A:</p> <p>Develop a Visitor Services Plan and establish protocols for monitoring effectiveness, quality of hunt program, and hunter satisfaction.</p> <p>Amend hunt plan and annual program to allow deer hunting on Petit Manan Point Division according to the following:</p> <ol style="list-style-type: none"> <li>1) disabled hunters only during the regular rifle season;</li> <li>2) hunters of all abilities during the muzzle-loader season; and,</li> <li>3) hunt area will be defined as above the access road in the Birch Point trail area.</li> </ol>	<p>Same as Alternative B</p>	<p>No hunting would occur on Refuge lands.</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<b>Issue 14: How will we manage furbearer populations on the Refuge Complex?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
Allow trapping for management purposes only, typically to control predators on species of concern, to protect property and infrastructure, or for public safety.	Same as Alternative A, except:  Continue to evaluate opportunities for a general trapping season with MDIFW. Additional analysis and public review would be necessary.	In addition to Alternative A:  Allow trapping on Gouldsboro Bay, Sawyers Marsh, and Petit Manan Point mainland divisions, Cross Island and Bois Bubert islands, according to State and Refuge regulations. On mainland divisions, trapping would not be allowed from at least Sept through Nov during the waterfowl migration season.	No trapping or other lethal control would occur.
<b>Issue 15: How will we manage compatible, traditional or non-priority public uses on Refuge lands?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
Require special use permits, after determined compatible, for all "for-profit" Refuge island users.  Allow dog-walking on leash, on designated Refuge mainland trails. Dogs are not allowed on Refuge islands.  Continue to allow MITA to administer camping opportunities on Halifax and Bois Bubert islands on designated sites. Coordinate with MITA to monitor the number of users and their impacts.  Continue to allow berry-picking by hand (no rakes) for personal use on the Refuge mainland divisions.	Same as Alternative A, with the exception of the following:  Camping on the two Refuge islands: Halifax and Bois Bubert, would be administered as described in Issue 3.  Islands acquired in the future would not be opened to camping since all have active seabird or eagle nesting on them.  Establish a formal Island Stewardship program with MITA or other partners on at least 5 more island to conduct resource monitoring and to make contacts with day users.	Same as Alternative B, with the exception of the following:  Camping on the two Refuge islands: Halifax and Bois Bubert, would be administered as described in Issue 3.	Same as Alternative A, with the exception of the following:  All Refuge islands would be closed to public access year round, except under special use permit or in staff- or partner-led programs.

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<b>Issue 16: How will we curtail inappropriate, non-wildlife-dependent activities on Refuge lands?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>Continue support for Friends of Maine Islands Seabird group who assist with education and outreach.</p> <p>Post new refuge boundary signs immediately after acquisition; post Service identification signs, and list permitted/prohibited uses, at strategic access points.</p> <p>Hire seasonal staff on Petit Manan Point Division to maintain a presence there.</p> <p>Continue to work with other law enforcement agencies such as Maine DMR, MDIFW-Warden Service, and Maine State Police to enforce refuge regulations.</p> <p>Maintain informational kiosk at Petit Manan Point Division, and continue to post current regulations.</p> <p>Install informational kiosks at Rockport and Milbridge offices.</p> <p>Conduct media outreach (news releases, news columns) when an event is planned.</p>	<p>In addition to Alternative A:</p> <p>Insure kiosks at Refuge Offices, and the posting of information, regulations and allowed activities is accessible to visitors after hours.</p> <p>Install refuge boundary signs at secondary access point to Gouldsboro Bay Division.</p> <p>Hire at least 2 full time Park Rangers to conduct informational and outreach programs and to patrol islands and mainland units during summer and fall months.</p> <p>Purchase supplemental, automated phone service for both Refuge offices to announce current Refuge regulations, island openings/closings and upcoming events.</p> <p>Replace all existing Refuge island identification signs with improved design, including the new closure dates. Work with State and MITA to make consistent informational/regulatory signs.</p> <p>Install gates at Sawyers Marsh Division access points to preclude access other than by foot on designated trails.</p> <p>Pursue agreement with Town of Gouldsboro to allow the installation of gates at either end of Old County Road and limit vehicle use to emergency vehicles and private abutters only.</p> <p>Expand and formalize law enforcement partnerships with such agencies as Maine DMR, MDIFW-Warden Service, and Maine State Police to enforce refuge regulations.</p>	<p>In addition to Alternative B:</p> <p>Require groups of 6 or more to obtain a special use permit prior to visiting islands (day use).</p> <p>Hire 2 more full time Park Rangers for increased LE patrols.</p> <p>Obtain AM radio frequency for visitors to tune in for current Refuge information (e.g., regulations, openings/closing events, etc.)</p>	<p>Conduct regular outreach and education (news releases and news columns).</p> <p>Monitor Refuge lands with assistance from land trust partners, MDIFW, adjacent landowners, and volunteers.</p> <p>Expand and formalize partnership with other LE agencies such as Maine DMR, MDIFW-Warden Service, and Maine State Police.</p> <p>LE would be a collateral duty for at least 2 staff members.</p> <p>Hire at least one Refuge LE Officer.</p> <p>Access barriers may be used at some Refuge access points to stop illegal vehicular entry.</p>

Table 2-1 Comparison of Management Actions by Alternative (cont'd.)

<b>Issue 17: Which islands will be studied for their wilderness potential and recommended for inclusion into the National Wilderness Preservation System?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>No Refuge lands are currently designated as wilderness, and none are proposed for further wilderness study.</p>	<p>Recommend 13 islands in 8 wilderness study areas be approved for wilderness designation (see Appendix D).</p> <p>All 8 wilderness study areas would be managed for their wilderness character pending a final decision. Current management of these islands would not need to change; it is consistent with maintaining wilderness values. Also, no proposed activities would diminish wilderness character or values.</p> <p>WSA boundaries are defined by mean high water and exclude private inholdings and rights-of-way on Cross and Bois Bubert islands. They also exclude the common boat landing and Lily Lake on Bois Bubert island. As these exclusions are acquired by the Service, we will incorporate them into the respective WSA or designate wilderness area through administrative action.</p> <p>Undertake another wilderness review in 15 years as part of the next revision of the CCP.</p>	<p>Same as Alternative B except the following:</p> <p>Bi-annually conduct a wilderness review on newly acquired islands. Make recommendations as warranted with outcome of inventory and study phases of review.</p>	<p>No Refuge lands are recommended for special wilderness designation; however, those lands currently with wilderness character will remain as such since management is strictly limited.</p>
<b>Issue 18: What funding and staffing levels and infrastructure will we need to manage a Refuge that spans the coast of Maine and includes offshore islands?</b>			
<b>Alternative A Current Management</b>	<b>Alternative B The Service's Preferred Alternative</b>	<b>Alternative C</b>	<b>Alternative D</b>
<p>We would maintain our 7 permanent staff positions (see Appendix F).</p> <p>Based on the Service's essential staffing formula, which identifies the minimum number of staff needed for a refuge based on its complexity, the Regional Director approved 20.5 permanent staff positions for the Refuge.</p> <p>Funding levels for FY04 were as follows:</p> <p>Operations (1261): \$493,222.00 Maintenance (1262): \$34,100.00</p>	<p>Increase permanent staffing to 23 positions (see Appendix F), based primarily on approved, essential staffing formulas and needs for proposed programs. Some current positions would be given a higher grade. Most of the new positions are in the biological, public use, and law enforcement program areas.</p> <p>RONS project funding levels (primarily 1261-Operations dollars) would increase by the amounts presented in Appendix E; MMS funding levels (primarily 1262-Maintenance dollars) are also in Appendix E.</p>	<p>Increase permanent staffing to 27 positions (see Appendix F). Some current positions would be given a higher grade. Most of the new positions are in the biological and public use program areas.</p> <p>Funding levels would increase from current levels by the amounts presented in Appendix E.</p>	<p>Increase permanent positions to 11 (see Appendix F). Most of the new positions are in law enforcement.</p> <p>No new RONS projects are proposed and maintenance levels would be the same as Alternative A.</p>

**Table 2-2 All 151 Nationally significant islands which are not permanently protected and are proposed for Service acquisition in Alternatives A, B, and/or C\***

Island Name	CIREG+	Town	Acres#	CCP Alternative**		
				A	B++	C
Anguilla I	79-574	Jonesport	12.9			√
Appledore I	81-191	Kittery	99.1		√	√
Bald RK	59-036	Steuben	1.3		√	√
Bar I	63-802	Saint George	8.1		√	√
Bar I	79-820	Milbridge	82.2			√
Bar I	79-291	Machiasport	49.7			√
Bartlett I	59-240	Mount Desert	2,158.6			√
Beach I	59-687	Deer Isle	73.4			√
Bean I	59-190	Sorrento	30.1		√	√
Bear I	59-925	Deer Isle	20.1		√	√
Bear Head I	59-596	Brooksville	0.4			√
Big Nash I/Cone	79-626	Addison	75.3	√	√	√
Black I	59-132	Bar Harbor	13.8		√	√
Bluff Head	63-079	Vinalhaven	7.8			√
Buckskin I	59-110	Franklin	5.6		√	√
Burnt Porcupine I	59-198	Gouldsboro	37.6			√
Calf I	59-177	Sorrento	98.2			√
Cape Wash I	79-297	Cutler	21.1		√	√
Compass I	59-790	Deer Isle	7.0	√	√	√

**Table 2-2 All 151 Nationally significant islands which are not permanently protected and are proposed for Service acquisition in Alternatives A, B, and/or C\* (cont'd.)**

Island Name	CIREG+	Town	Acres#	CCP Alternative**		
				A	B++	C
Canary Nub	59-137	Blue Hill	0.2	√	√	√
Crane I (N)	63-501	Vinalhaven	35.9			√
Crane I (S)	63-505	Vinalhaven	1.6		√	√
Crawford I	73-072	Bath	7.6			√
Crow I	63-651	Matinicus Isle Plt	11.8		√	√
Crow I	59-448	Frenchboro	10.6		√	√
Current I	59-849	Deer Isle	2.3			√
Curtis I	63-313	Camden	7.8			√
Damariscove I	65-280	Boothbay	242.3	√	√	√
Double Shot I	79-580	Jonesport	7.5			√
Duck Ld I	79-412	Addison	1.1		√	√
Eagle I	81-010	Saco	3.1	√	√	√
Eastern I	79-843	Steuben	4.7	√	√	√
Eastern Mark I	59-956	Stonington	9.9		√	√
Fellows I	79-464	Roque Bluffs	33.0		√	√
Fisherman I	65-274	Boothbay	70.7		√	√
Fisherman I	79-694	Beals	48.1		√	√
Flat I	79-621	Addison	19.6	√	√	√
Fog I	63-264	Isle au Haut	56.7		√	√
Folly I	81-101	Kennebunkport	5.4		√	√

**Table 2-2 All 151 Nationally significant islands which are not permanently protected and are proposed for Service acquisition in Alternatives A, B, and/or C\* (cont'd.)**

Island Name	CIREG+	Town	Acres#	CCP Alternative**		
				A	B++	C
Foster I	79-789	Harrington	322.5			√
Freds I	79-193	Trescott Twp	3.4			√
French House I	79-523	Beals	8.1			√
Freyee I (W)	73-030	Topsham	5.3		√	√
Fuller RK	73-308	Phippsburg	2.4		√	√
Gooseberry I	79-219	Trescott Twp	4.5			√
Gooseberry I	59-398	Swans Island	5.4	√	√	√
Graffam I	63-634	Muscle Ridge Shoals Twp	65.1		√	√
Great Cranberry	59-270	Cranberry Isles	1,064.9			√
Great Wass I	79-512	Beals	2,653.6			√
Green I	65-423	Southport	19.6			√
Green LD	63-135	Vinalhaven	0.7		√	√
Greens I	63-157	Vinalhaven	432.5			√
Haddock I	65-200	Bristol	12.1	√	√	√
Harbor I	59-450	Frenchboro	19.9		√	√
Harbor I	63-701	Friendship	96.7	√	√	√
Hardwood I	79-410	Addison	20.2			√
Hog I	65-019	Damariscotta	4.7		√	√

Table 2-2 All 151 Nationally significant islands which are not permanently protected and are proposed for Service acquisition in Alternatives A, B, and/or C\* (cont'd.)

Island Name	CIREG+	Town	Acres#	CCP Alternative**		
				A	B++	C
Hope I	79-393	Roque Bluffs	5.5		√	√
House I	55-381	Portland	31.1		√	√
Hurricane	63-626	Matinicus Isle Plt	1.8		√	√
Inner Porcupine I	59-799	Deer Isle	10.2		√	√
Ironbound I	59-182	Winter Harbor	830.8			√
Isle Au Haut	63-230	Isle au Haut	6,808.9			√
Isle of Springs	65-408	Boothbay Harbor	104.9			√
Islesboro I	77-012	Islesboro	7,750.9			√
Jed I	59-136	Bar Harbor	11.8			√
Johns I	59-351	Swans Island	21.8		√	√
Kilkenny Cove I	59-089	Hancock	3.1			√
Lanes I	55-200	Yarmouth	28.2		√	√
Large Green I	63-655	Matinicus Isle Plt	85.3	√	√	√
Lower Birch I	79-742	Addison	23.9			√
Lt Black I	59-443	Frenchboro	2.9			√
Lt Cranberry I	59-313	Cranberry Isles	491.3			√
Lt Green I	63-654	Matinicus Isle Plt	36.0	√	√	√
Lt Green I	63-418	Matinicus Isle Plt	2.9	√	√	√
Lt Lines I	73-090	Woolwich	0.9			√
Lt Ram I	79-462	Roque Bluffs	2.0		√	√

**Table 2-2 All 151 Nationally significant islands which are not permanently protected and are proposed for Service acquisition in Alternatives A, B, and/or C\* (cont'd.)**

Island Name	CIREG+	Town	Acres#	CCP Alternative**		
				A	B++	C
Lt River I	79-304	Cutler	16.9			√
Lt Spruce I	79-481	Jonesport	84.3			√
Lt Sprucehead	59-772	Deer Isle	44.1		√	√
Lt Whaleboat I	55-282	Harpwell	18.0	√	√	√
Lt Whaleboat I (Se)	55-283	Harpwell	4.3		√	√
Mahoney I	59-933	Brooklin	7.0	√	√	√
Matthews I	79-128	Eastport	18.1			√
Mink I	79-679	Beals	2.6			√
Mouse I	63-330	North Haven	2.7	√	√	√
Mt Desert I	59-119	Bar Harbor	69,051.2			√
Nash I	79-627	Addison	16.7	√	√	√
Neck I	63-081	Vinalhaven	21.7			√
Nehumkeag I	61-002	Gardiner	2.3			√
Oak I	63-421	Matinicus Isle Plt	1.8	√	√	√
Outer Porcupine	59-800	Deer Isle	6.3		√	√
Outer Ram I	79-602	Beals	8.6		√	√
Penobscot I	63-093	Vinalhaven	257.0			√
Pig I	79-520	Beals	54.1			√
Pinkham I	79-787	Milbridge	79.6		√	√

**Table 2-2 All 151 Nationally significant islands which are not permanently protected and are proposed for Service acquisition in Alternatives A, B, and/or C\* (cont'd.)**

Island Name	CIREG+	Town	Acres#	CCP Alternative**		
				A	B++	C
Plummer I (w)	79-635	Addison	13.0			√
Pond I	59-347	Frenchboro	241.1		√	√
Pop I	79-832	Steuben	2.8			√
Ragged I	55-626	Harpwell	74.9		√	√
Ram I	55-521	Cape Elizabeth	2.8	√	√	√
Ram I	63-323	Rockport	1.1	√	√	√
Ram I	63-731	Friendship	1.3		√	√
Ram I	77-045	Islesboro	7.0		√	√
Ram I	79-601	Beals	29.3		√	√
Ram I	79-623	Addison	5.7			√
Ripley I	79-778	Harrington	0.9			√
Roque I	79-475	Jonesport	1,306.8			√
Sally I	59-037	Gouldsboro	5.3	√	√	√
Sams I	59-587	Pembroke	2.9			√
Sand I	63-730	Friendship	4.2		√	√
Scraggy I	59-836	Stonington	8.5	√	√	√
Seguin I	73-320	Georgetown	63.1		√	√
Sheep I	79-835	Steuben	7.9		√	√
Sheep I	63-393	Owls Head	62.3			√
Sheep I	59-039	Gouldsboro	9.4		√	√

**Table 2-2 All 151 Nationally significant islands which are not permanently protected and are proposed for Service acquisition in Alternatives A, B, and/or C\* (cont'd.)**

Island Name	CIREG+	Town	Acres#	CCP Alternative**		
				A	B++	C
Sheep I	79-514	Jonesport	4.2		√	√
Shingle I	59-959	Stonington	9.2		√	√
Sister I	59-447	Swans Island	30.3		√	√
Sow And Pigs	55-245	Freeport	2.9			√
Spectacle I	59-673	Brooksville	8.7	√	√	√
Spectacle I	79-132	Eastport	4.8	√	√	√
Spectacle I	63-503	Vinalhaven	3.7			√
Stave I	59-180	Gouldsboro	499.5			√
Stoney	73-065	Bath	1.5			√
Strout I	79-763	Harrington	20.8		√	√
Swans I	59-413	Swans Island	6,853.5			√
The Brothers (C)	63-580	Saint George	0.6		√	√
The Brothers (S)	63-581	Saint George	7.4		√	√
The Brothers N	63-579	Saint George	3.8		√	√
The Ladle	79-632	Addison	2.3	√	√	√
The Twinnies(N)	59-160	Bar Harbor	3.6		√	√
Thome I	73-067	Woolwich	11.5			√
Thread of Life	65-258	South Bristol	1.4		√	√
Three Bush I	59-980	Swans Island	1.6		√	√
Tinker I	59-242	Tremont	446.9			√

**Table 2-2 All 151 Nationally significant islands which are not permanently protected and are proposed for Service acquisition in Alternatives A, B, and/or C\* (cont'd.)**

Island Name	CIREG+	Town	Acres#	CCP Alternative**		
				A	B++	C
Toms I (N)	79-610	Addison	1.6			√
Trafton I	79-909	Harrington	113.2		√	√
Treasure I	59-170	Sorrento	18.7			√
Treat I	79-370	Eastport	73.2			√
Turnip I	55-427	Harpwell	1.9	√	√	√
Two Bush I	63-901	Matinicus Isle Plt	5.9	√	√	√
Upper Coombs I	55-088	Brunswick	8.6		√	√
Verona I	59-570	Verona	3,977.2			√
Vinalhaven	63-160	Vinalhaven	11,398.2			√
Western I	59-675	Deer Isle	22.0	√	√	√
Wilbur Neck (N)	79-081	Pembroke	69.4			√
Williams I	55-295	Freeport	21.4			√
Wood I	81-015	Biddeford	35.5	√	√	√
Wooden Ball I	63-917	Matinicus Isle Plt	138.2	√	√	√
Yellow Head I	79-290	Machias	15.8			√
<b>Total Acres</b>			<b>119,752.6</b>	881.8	2,314.40	119,752.60

\* "Nationally significant islands" are islands that meet criteria established by the Maine Coastal Nesting Islands Project partnership, a partnership among Federal and State agencies, non-governmental conservation organizations, and private landowners. These islands are critically important seabird and bald eagle nesting islands. "Not permanently protected" refers to islands that are not owned in fee, or do not have a conservation easement, by State or Federal agencies such that long-term or permanent protection of nesting sites is not guaranteed. 377 islands are nationally significant; 151 of these are not permanently protected. Of the unprotected islands, Alternative A proposes the Service acquire 30 islands, Alternative B proposes 87 islands, and Alternative C proposes all, or portions of, the 151 islands. Only portions of larger (>200 acre) islands may be acquired (approximately 125 acres at each site) around bald eagle nesting sites. As such, not all 119,752 acres in Alternative C is proposed, rather, approximately 6,310 acres is targeted

+ CIREG is the coastal island registry number, a unique identifier given islands by the State of Maine Planning Office

# Acres are rounded to the nearest tenth and are approximated from several sources (survey, deed, or GIS map)

\*\* Alternative D does not propose expanding the refuge other than those lands already approved for acquisition

++ Alternative B islands are depicted on maps in Appendix A

Table 2-3 Land acquisition summary by alternative

	Alternative A (Current Management)	Alternative B (Service' Preferred Alternative)	Alternative C	Alternative D
<b><u>Lands to be acquired within the existing, approved Petit Manan Refuge boundary*</u></b>				
Mainland	120 acres	120 acres	120 acres	120 acres
Islands (or parts of)	14 islands** (347 acres)	14 islands** (347 acres)	14 islands** (347 acres)	14 islands** (347 acres)
Corea Heath	400 acres	400 acres	400 acres	400 acres
<b><u>Lands proposed for acquisition which would expand the existing, approved Petit Manan Refuge boundary</u></b>				
Mainland	153 acres	153 acres	153 acres	0
Islands (or parts of)	30 islands (881 acres)	87 islands (2,306 acres)	151 islands (6,310 acres)	0
<b>Total Acres To Be Acquired (by alternative)</b>	<b>1,901 acres</b>	<b>3,326 acres</b>	<b>7,330 acres</b>	<b>867 acres</b>

\* All lands acquired will become part of Petit Manan Refuge; also, acquisition has been on-going during development of the CCP. Contact Refuge Headquarters for latest information.

\*\* Six of these islands are already part-owned by the Service; or in the process of Service acquisition.