

Within 3 years of CCP implementation:

- Provide vehicle parking at the Morris Island refuge headquarters and visitor contact station lot 24 hours daily; require paid parking from 9 a.m. to 6 p.m. daily with a 4-hour time limit during the June 1 to September 15 peak visitor season; parking would be free at other times.
- Replace the current motorized seal tour-ferry access system from the refuge headquarters on Morris Island with a competitive, multi-year concession, or special use permit holders if no concessionaire is identified. Provide two parking spaces for the concessionaire and shuttle vans. The concession would operate from refuge headquarters, but shuttle visitors from an off-refuge parking site to Morris Island and ferry visitors to North Monomoy Island and South Monomoy Island. It would also conduct interpretative natural and cultural history tours, arrange for refuge permitted fishing or waterfowl hunting guides, rent kayaks, and provide other visitor-related services. The concessionaire would be encouraged to manage guide services that facilitate hiking, paddling, or sailing, and encourage visitors to engage in non-motorized boating in order to promote a wilderness experience. The concessionaire will replace the current special use permit issued for ferry service.
- All commercial wildlife watching tours, passenger ferry service, kayak or paddling tours, and hunting and fishing guides would need a refuge permit to operate within the refuge Declaration of Taking boundary, regardless of whether vessels or passengers make a refuge landfall.

Within 5 years of CCP implementation:

- Through local and regional partners, provide a local-area shuttle serving Morris Island refuge facilities (and other destinations in Chatham) from secure, satellite parking locations during the June 1 to September 15 peak visitor season.
- Work with municipal partners on the use of a town-owned or private parking facility that could serve as a satellite parking location for a shuttle service that would bring visitors to the refuge.
- Assist the Town of Chatham to relocate the fencing and improve the shoulder on the east side of the Morris Island Road causeway to better accommodate shuttle passage, parked cars, and emergency vehicles.
- Encourage the Town of Chatham to create a multi-use bicycle and pedestrian path on one side of the causeway and provide assistance as possible to help the town implement this project.
- Provide bicycle and pedestrian facilities and amenities through local and regional partners at and around refuge headquarters, Chatham area shuttle stops, and other high priority downtown locations.
- Through local and regional partners, improve motor vehicle, bicycle, and pedestrian route directional signs to refuge Morris Island facilities, including designated trails, satellite parking and shuttle stops, and the concessionaire's off-refuge facilities; this may involve erecting new signs within Service rights-of-way on land owned by others.
- Through local and regional partners, add directional and informational signs throughout Chatham, along Route 6, and elsewhere on Cape Cod; improve traveler information on Service and refuge Web and social media sites, and on sites managed by local and regional partners.

- Complete a visitor services 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 objectives, and evaluate visitor experiences; modify or restrict access, or adapt management strategies as warranted.
- Encourage paddling as a means of transportation to the Monomoy Wilderness portions of the refuge by collaborating with local and regional partners or the refuge concessionaire to provide kayaking launch facilities, rentals, instruction, and group outings to the Monomoy Wilderness.
- Explore the feasibility of improving the non-motorized watercraft launch site at the northern stairway and existing asphalt path, or along the Morris Island causeway; examine possibilities for constructing a waterfront access way meeting Americans with Disabilities Act requirements at the headquarters site or across the Tisquantum Road right-of-way.
- Extend an Americans with Disabilities Act-compliant boardwalk segment from the existing Morris Island Trail boardwalk to the Nauset/South Beach-Outermost Harbor overlook trail stops.

Within 7 years of CCP implementation:

- Work with partners to evaluate possible locations closer to Main Street in Chatham or somewhere in Harwich to establish a new visitor contact station. When funding allows, open this new facility, which could be shared space with partner groups, and transfer exhibits from the current refuge headquarters, which would primarily serve as administrative offices.

Monitoring Elements

- Estimate the number of visitors at the refuge engaged in wildlife-dependent priority and other nonpriority public use activities.
- Monitor available empty parking spaces and document traffic congestion at the Morris Island refuge administrative complex and nearby causeway throughout the year.
- Record the number of special use permits.
- Conduct a daily patrol of the Morris Island parking lot for vehicles displaying valid parking passes and enforce parking fee requirements when violations are detected.
- Monitor and report daily parking fee collections and number of parking passes issued.
- Record the number of visitors who utilize concession services.

**Objective B2.2
(Interpretation)**

Ensure that at least 75 percent of refuge visitors receive high-quality information about the purposes and mission of the refuge, Refuge System, and the Monomoy Wilderness. Visitors would have increased opportunities to recognize the unique natural resources of the refuge and its importance to the recovery and management of migratory birds, including the recovery of listed species, plus Monomoy NWR's importance to the enduring wilderness resource and coastal resource stewardship of the outer Cape region.

Rationale

Interpretation is a priority public use identified in the Refuge Improvement Act and is one of the most effective 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 Commonwealth of Massachusetts is currently low. 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.

Providing increased high-quality opportunities for the public to engage in interpretive activities promotes stewardship of natural resources, and an understanding of the refuge's migratory bird, endangered species recovery, and wilderness stewardship purposes. Interpretive activities also garner support for refuge programs and help raise public awareness of the role of the refuge in the Cape Cod and Islands region, and its contribution to inter-continental migratory bird conservation.

We define high-quality interpretive programs as those that increase public awareness and understanding of the Refuge System; develop a sense of stewardship leading to actions and attitudes that reflect concern and respect for wildlife resources, cultural resources, and the environment; provide an understanding of the management of our natural and cultural resources; and provide safe, enjoyable, accessible, meaningful, and high-quality experiences for visitors that increase their awareness, understanding, and appreciation of fish, wildlife, plants, and their habitats. The National Association of Interpreters defines "interpretation" as a communication process that forges emotional and intellectual connections between the interests of the audience and the inherent meanings in the resource.

Many of the interpretive materials at the visitor contact station are 10 years old and need to be updated to current Service standards and refuge management operations. Guided tours would further increase opportunities for interpretation. In order to maintain the integrity of wilderness, no kiosks would be constructed on North Monomoy Island or South Monomoy. Information would be available through the use of technology, such as podcasts and handheld devices such as PDAs.

Strategies

Continue to:

- Welcome visitors to the visitor contact station on Morris Island and strive to have it open year-round, with reduced hours from October through April, and open 7 days a week during summer months when the refuge hires interns.
- Inform the public about the refuge and Refuge System, its purpose and mission, and its resources using brochures, rack cards, interpretative panels on trails, and the refuge Web site.
- Update refuge literature and daily/seasonal information (e.g., flood warning, high tide info, etc.) in a timely manner as conditions and access change based on bird nesting and seal haulout occurrences.
- Provide refuge visitors with wilderness ethics and stewardship information and Monomoy Wilderness information through the visitor contact station, Web site, social media, printed materials, and community outreach activities.
- Maintain the interpretive panels along the Morris Island Trail.
- Install seven new or replacement interpretive panels along the Morris Island Trail.
- Develop temporary, portable exhibits designed to describe Monomoy's biotic diversity, including wildlife, plants, fish, natural processes, its wilderness character, and their management at Monomoy refuge.

- Provide an informational kiosk on Morris Island containing signs and literature that orient visitors to the refuge and inform them of public use regulations.
- Issue press releases to inform the public about refuge activities and accomplishments.

Within 1 year of CCP implementation:

- Improve informational materials at the Morris Island kiosk to highlight the importance of the Monomoy Wilderness and the importance of the refuge as a migration stopover site for threatened and endangered species.
- Issue permits for interpretive commercial water-based tours and interpretive commercial land-based natural history and cultural history tours until a concessionaire contract is awarded.
- Work with concessionaire or professional guide services to provide natural history and wildlife day trip tours of the islands.
- Conduct seasonal interpretive programs at the refuge by refuge staff, interns, and volunteers, and provide roving interpreters on the Morris Island Trail; content would include wilderness area components.
- Increase public awareness of the Monomoy Wilderness through outreach and social media, including outreach to audiences who engage in water-dependent activities (e.g., anglers, divers, paddlers).
- Provide comment boxes and an online form for refuge visitors to provide feedback about their refuge experience. Evaluate comments and respond appropriately to address issues affecting the quality of the visitor experience.
- Develop voluntary guidelines and an interactive game for visitors that address visitor behavior and the importance of maintaining bird and wildlife buffers, practicing “leave no trace,” and other wilderness ethics.
- Initiate an outreach campaign to provide information to all visitors about the importance of minimizing disturbance to migrating and staging birds; the outreach message would focus on a recommended viewing distance of at least 50 m to allow birds to remain undisturbed in their resting and foraging areas critical to successful migration.

Within 5 years of CCP implementation:

- Complete a visitor services 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.
- Create and disseminate fact sheets about key refuge resources (e.g., endangered and threatened species, barrier island ecosystem, salt marsh habitat), refuge management (e.g., predator management, seasonal closures), Monomoy Wilderness, and watchable wildlife such as seals.

Within 7 years of CCP implementation:

- Use virtual technology such as text tours, podcasts, and virtual geocaching and letterboxing to conduct interpretation.
- Explore the option of creating a smartphone application (or other future technology) with Monomoy Wilderness coordinates and information about the wilderness designation.

- Develop podcasts and other materials designed to provide portable interpretation to refuge visitors about refuge resources (e.g., species of concern, migratory birds) and the Monomoy Wilderness.
- Develop a self-guided interpretive kayak trail and brochure.
- Provide additional summer programs on and offsite that include guided nature walks and an evening lecture series on timely refuge topics.
- Redesign current visitor contact station interpretive materials and displays using formal storyline and professionally designed exhibits.

Within 10 years of CCP implementation:

- Develop a self-guided interpretive brochure for a Powder Hole to Monomoy Point Lighthouse trail that interprets the unique natural and cultural history of the area, wildlife resources, and wilderness.
- Develop seasonal paddling tours/routes using podcasts to describe refuge wildlife, habitats, and management actions.

Monitoring Elements

- Record the number of participants at onsite and offsite refuge programs and events.
- Record the number of visitors to the refuge Web site.
- Record the number of people who report use of geocaching trail and stamp letterbox.
- Record the number of visitors to the visitor contact station on a daily basis.
- Record the number of refuge brochures/rack cards ordered on an annual basis.
- Record the number of visitors who participate in concessionaire-led tours.
- Record the number of participants on tours guided by refuge staff and volunteers.
- Record visitor feedback and actions taken to improve visitor experiences based on feedback.

**Objective B2.3
(Environmental Education)**

Develop a minimum of two curriculum-based programs for local and regional school districts to use that will focus on Monomoy NWR, Monomoy Wilderness, the National Wildlife Refuge System, National Wilderness Preservation System, endangered species, species of conservation concern, migratory birds, refuge management, and wilderness stewardship. Students who participate in the refuge's environmental education program would be able to understand the importance of wildlife conservation, with a focus on migratory birds; understand the need for wilderness stewardship; identify the refuge's role in the National Wildlife Refuge and National Wilderness Preservation Systems in conserving Federal trust resources; explain the unique characteristics of the Monomoy Wilderness; and name at least one endangered species for which the refuge conducts management.

Rationale

Environmental education is a process designed to develop citizenry with the awareness, concern, knowledge, attitudes, skills, motivations, and commitment to work toward solutions of current environmental problems and the prevention of new ones. Environmental education is identified in the Refuge Improvement

Act as a priority public use. Providing high-quality environmental education opportunities for the public on a refuge can promote stewardship of natural resources, develop an understanding of the refuge's purposes and the mission the Refuge System, and help raise awareness, understanding, and an appreciation of the refuge's role along the Massachusetts coast and its contribution to migratory bird conservation. Environmental education can also garner support for other refuge programs. Investing in youth and providing unique opportunities in a structured learning environment is a top priority in the Service; the refuge staff would explore additional opportunities to support agency goals.

There are multiple national and international efforts to connect children with the outdoors, and to utilize natural resources as outdoor classrooms. In March 2010, President Obama issued "A Blueprint for Reform: The Reauthorization of the Elementary and Secondary Act" (also referred to as No Child Left Behind). This blueprint addresses the need for leadership, equality, and innovation in the school systems. The President has challenged the country "that by 2020, the United States will once again lead the world in college completion," (U.S. Department of Education 2010). President Obama clearly states that this is not a job for teachers, parents, and principals alone—this should be done collaboratively.

There are additional efforts that have been introduced, such as the Commonwealth of Massachusetts' "No Child Left Inside" initiative, the Massachusetts Department of Conservation and Recreation's "Great Park Pursuit," and the Children and Nature Network, which provides free resources and tool kits and encourages organizations to reconnect children to nature. National wildlife refuges are an ideal venue to provide students and teachers with a hands-on learning environment while achieving scholastic goals. As concerns about nature-deficit disorder and child obesity rise (Louv 2005), it appears to be imperative now than ever that local organizations facilitate and provide opportunities for children to explore and learn in the outdoors.

This objective focuses on creating curriculum-based programs on and off the refuge with local schools, teachers, and other educators, utilizing available resources provided by organizations such as the Children and Nature Network and the Massachusetts Department of Conservation and Recreation. The refuge can provide local teachers with educational material that supports existing curricula on the importance of the Monomoy refuge and an enduring wilderness resource for rare habitats and waterfowl, shorebirds, seabirds, other wildlife, and plant communities.

Strategies

Continue to:

- Host school field trips as requested, as timing and resources allow.

Within 5 years of CCP implementation:

- Complete a visitor services 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 objectives, and evaluate visitor experiences; modify or restrict access, or adapt management strategies as warranted.
- Host one to two teacher workshops each year on threatened and endangered species and other topics relevant to the refuge's mission.
- Provide assistance for teacher workshops upon request and coordinate with area educators to survey existing programs; develop curricula and programs that would enhance or complement environmental education programs in the area (e.g., outer Cape).

- Provide access to Children and Nature Network tool kits in English and Spanish.
- Determine what environmental education subjects are already being delivered to which age group audiences in the surrounding communities to identify gaps remaining in program subjects or age groups being served.

Within 7 years of CCP implementation:

- Work with partners to conduct a pilot study to determine age-appropriate curriculum content and strategize to target education efforts to age groups not currently being served by other education organizations.

Within 10 years of CCP implementation:

- Create at least two curriculum-based environmental education programs in coordination with partners that can be utilized on or offsite and incorporate the Massachusetts curriculum frameworks along with key refuge messages; these can be utilized by local and regional school districts based on the findings of a pilot study.
- Expand efforts to coordinate with area environmental educators to integrate refuge programs with local environmental education programs.

Monitoring Elements

- Record the number of students and teachers who participate in refuge environmental education programs and field trips.
- Maintain a listing of curriculum-based programs that refuge staff, interns, or volunteers develop with partners or on their own.
- Record the number of students who engage in non-refuge-led environmental education on the refuge.
- Record the number of requests for supporting documentation and materials developed to support curriculum-based educational modules about the refuge and wildlife found on the refuge.
- Record the number of teacher workshops and the number of attendees.
- Record the number of times tool kits are checked out.

Objective B2.4 (Wildlife Observation and Photography)

Provide opportunities for refuge visitors to engage in wildlife observation and photography in a manner that minimizes disturbance to refuge habitats and wildlife, striving to ensure that 75 percent of visitors report a high-quality experience.

Rationale

Wildlife observation and photography are identified in the Refuge Improvement Act as priority public uses. Priority public uses are to receive enhanced consideration when developing goals and objectives for refuges.



Lighthouse at Monomoy

Bill Thompson/USFWS

This alternative expands upon alternative A by enhancing infrastructure and visitor services (i.e., concessionaire services) to increase wildlife observation and photography opportunities in a manner consistent with preserving wilderness character. We would establish a concessionaire in order to facilitate enhanced and increased opportunities for the public to observe and photograph wildlife on the refuge. Monomoy NWR and neighboring Nauset/South Beach are known worldwide for the magnificent and dynamic landscape, and offer the chance to participate in premier bird watching. Those who visit the refuge experience something magical and unique, and find a sense of true escape and solitude in the wilderness.

The refuge facilitates opportunities for wildlife observation and photography through self-guided nature trails, observation areas, and water-based tours. We strive to provide safe, accessible wildlife observation and photography opportunities while protecting wildlife and their habitats at sensitive times in sensitive places. We intend to provide opportunities to experience solitude, unconfined recreation, and naturalness on the refuge and in the Monomoy Wilderness. Providing additional or enhanced high-quality opportunities for visitors to engage in these activities on the refuge promotes visitor appreciation and support for refuge programs.

High-quality wildlife observation and photography can be defined as:

- Observation that occurs in a primitive setting and provides an opportunity to view wildlife and habitats in a natural setting.
- Observation facilities that are safe and maximize opportunities to view the spectrum of species and habitats of the refuge.
- Observation opportunities that promote public understanding of and increase public appreciation for America's natural resources.
- Viewing opportunities that inspire increased stewardship of our refuge resources.
- When provided, facilities that blend with the natural setting and provide viewing opportunities for all visitors, including persons with disabilities.
- Observers who understand and follow procedures that encourage the highest standards of ethical behavior in natural and wilderness areas.
- Viewing opportunities that exist for a broad range of visitors.
- Observers who have minimal conflict with other priority wildlife-dependent recreational uses or refuge operations.

In 2009, the U.S. Fish and Wildlife Service reported that 48 million birdwatchers across America spent \$35 billion in 2006 pursuing one of the Nation's most popular outdoor activities. The report, *Birding in the United States: A Demographic and Economic Analysis*, is based on data collected during the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

The refuge staff receives multiple requests for commercial filming and photography each year. As production companies recognize the unique experience Monomoy refuge offers, their desire to capture that to share with the world places demands on refuge staff. Special use permits are required whenever the photographic images will or can be marketed (e.g., sale of copyrighted images, including videography). Videos must be wildlife and wilderness oriented.

Issuance of special use permits to allow commercial filming and photography will contain stipulations to protect refuge wildlife resources and wilderness character.

Strategies

Continue to:

- Allow wildlife observation, which includes nature study, year-round on refuge lands open to public use from ½ hour before sunrise to ½ after sunset; prohibit touching, feeding, or harassing wildlife.
- Maintain the two viewing platforms on Morris Island (map 1.2).
- Allow photography in any area of the refuge open to the public.
- Host a youth or adult photography contest.

Within 1 year of CCP implementation:

- Allow commercial filming and photography on the refuge only when there is a direct benefit to the refuge or the Service. All allowed commercial filming and photography would operate under a special use permit issued by the refuge manager. Commercial photography would also have to support wilderness and be conducted in a manner consistent with protecting wilderness character.

Within 3 years of CCP implementation:

- Develop flexible closures to minimize disturbance to migrating and staging shorebirds.
- Work with local photography and birding clubs to promote awareness of wildlife and wilderness values of the refuge, ensure their members understand refuge regulations, and maintain a connection to one of the refuge's most important constituencies.

Within 5 years of CCP implementation:

- Complete a visitor services plan for the refuge; 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.
- Provide trails on refuge lands for wildlife observation; wilderness trails would not be maintained by refuge staff but would be clearly marked by satellite coordinates so visitors may use GPS-enabled devices to find the path, if necessary.
- Evaluate use of critter cam(s) so the public can observe nesting behavior online, which would facilitate a connection to animals they may not be able to view in person.
- Work with visiting clubs to ensure disturbance is minimized when birding expeditions occur.
- Develop guidelines for group visits into the Monomoy Wilderness and for local organizations that conduct photography trips on the refuge.
- Work with a concessionaire to highlight prime wildlife photography and observation opportunities.
- Develop a portal for eBird Web site (*www.ebird.org*) information that is reported by visitors to the refuge.

Within 7 years of CCP implementation:

- Evaluate and implement opportunities for universally accessible observation; enhance existing boardwalk at the refuge headquarters to make it accessible under the Americans with Disabilities Act for improved observation opportunities at the overlook on Morris Island Trail.
- Install an additional viewing platform or photography blind on Morris Island.

Monitoring Elements

- Record the number of visitors engaged in wildlife observation and photography annually.
- Record visitor feedback and actions taken to improve visitor experiences based on feedback.
- Record the number of special use permits issued for commercial photography and guided wildlife observation tours.
- Record the number of passengers and participants who utilize guides or the concessionaire in trips to the refuge.
- Record the number of photography contest submissions.
- Record information collected for eBird Web site.

Objective B2.5 (Fishing)

Provide opportunities for fishing, and strive to ensure that 50 percent of visitors engaged in recreational fishing report having a high-quality experience.

Rationale

The waters off of Monomoy NWR have a deserved reputation as a world-class surf fishery. Novice anglers, as well as experienced anglers visit Monomoy NWR every year. Many recreational anglers are also accompanied by commercial guides. Most fishing visits are for surf fishing, but some visitors also harvest lobsters, crab (not horseshoe crabs), and whelk.

Where fin fishing, lobster, crab, and whelk pot harvesting, and hand-harvest of scallops occur in the open waters lying above the submerged lands within the Declaration of Taking, we will work with the National Marine Fisheries Service and the Massachusetts Division of Marine Fisheries to implement their regulations for these fisheries. These activities do not cause disturbance to the submerged lands.

Since fishing is a priority use, every effort would be made to accommodate fishing when it does not hinder our compliance with Federal law to protect migratory birds and other federally listed species, preserve wilderness character, or protect cultural or historic resources. When necessary to protect refuge resources, symbolic fencing can be placed or moved to accommodate both nesting birds and fishing access across space and time, dependent upon the location and duration of nesting birds.

Anglers may fish on their own or with the assistance of a commercial guide. Fishing with the use of a commercial guide will be regulated on the refuge through a special use permit. There are many benefits to anglers who are working with a commercial guide with the oversight of refuge staff, which is only possible if all commercial guides obtain a special use permit from the refuge. The special use permit would identify refuge rules, regulations, and closed areas. It would highlight habitats and species of concern that should be avoided by anglers

to reduce disturbance, and would explain wilderness so all activities conducted by anglers are consistent with preserving the wilderness character of refuge lands and waters. Refuge staff would establish a fair and equitable system for commercial fishing guides to operate on the refuge. The refuge expects that these guides would help increase fishing opportunities on the refuge with an added level of safety, reduce conflicts with refuge wildlife, protect sensitive refuge habitats, and ensure greater protection and appreciation of wilderness character.

We would endeavor to promote fishing on the refuge by participating in local fishing tournaments, contracting with vendors to provide guided fishing tours for the general public, and distributing materials that describe local sport fish of interest and applicable fishing regulations. We would explore partnerships with local angler organizations and other groups to ensure quality fishing opportunities and experiences on the refuge.

We define a high-quality fishing program as one that:

- Maximizes safety for anglers, other visitors, and refuge staff.
- Causes no adverse impacts on populations of resident or migratory species, native species, threatened and endangered species, or habitat.
- Encourages the highest standards of ethical behavior in regard to catching, attempting to catch, and releasing fish.
- Is available to a broad spectrum of the public that visits, or potentially would visit, the refuge.
- Provides reasonable accommodations for individuals with disabilities to participate in refuge fishing activities.
- Reflects positively on the Refuge System.
- Provides uncrowded conditions.
- Creates minimal conflict with other priority, wildlife-dependent recreational uses or refuge operations.
- Provides reasonable challenges and harvest opportunities.
- Increases visitor understanding and appreciation for the fishery resource.

Strategies

Continue to:

- Allow fin fishing from all refuge lands otherwise open to public use, from ½ hour before sunrise to ½ hour after sunset, in accordance with Massachusetts and Federal regulations, which includes possessing a saltwater or freshwater fishing license recognized by the Commonwealth of Massachusetts.
- Allow fishing in the open waters, above submerged lands, under State and Federal regulations. Included fishing activities are: demersal long line fishing; mid-water trawl fishing, hook and line/rod and reel fishing; lobster, crab, and whelk pot fishing; and hand-harvest of scallops.
- Allow anglers to fish on Morris Island 24 hours per day in accordance with all Federal and State fishing regulations.
- Allow freshwater fishing in the ponds on South Monomoy during daylight hours.

Within 1 year of CCP implementation:

- Conduct outreach about new fishing opportunities on the refuge.
- Provide seasonal information (e.g., conditions, species, fish runs) on the refuge's Web site and at the Morris Island kiosk, and distribute to local fishing organizations, guides, and shops; this would include closed areas maps and any additional refuge-specific regulations.
- All commercial fishing guides would need a refuge permit to operate within the refuge DT boundary, regardless of whether vessels or passengers make a refuge landfall.

Within 3 years of CCP implementation:

- Replace the current motorized seal tour-ferry access system from the refuge headquarters on Morris Island with a competitive, multi-year concession, or special use permit holders if no concessionaire is identified; the concession would arrange for refuge-permitted fishing or waterfowl hunting guides and provide a system to bring anglers and their guides to the refuge, along with providing other visitor related services.
- Establish a station at headquarters for recycling monofilament and safely disposing of fish line.

Within 5 years of CCP implementation:

- Complete a visitor services 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.
- Work with partners and coordinate with the State to develop a fishing brochure that informs anglers about refuge resources and seasonal closures and would be available on the refuge's Web site and at Morris Island kiosk.
- Work with partners to establish an annual fishing event on the refuge.

Within 10 years of CCP implementation:

- Evaluate the fishing program; modify or restrict access, or adapt management strategies as warranted

Monitoring Elements

- Report the estimated number of fin fishing visits to refuge.
- Record feedback from the concessionaire to document number of anglers transported to the refuge and comments received about each individual's experience per trip.
- Record actions taken to improve visitor experiences based on feedback.
- Record the number of special use permits for commercial guides awarded annually.
- Record harvest data and information that is voluntarily reported to the refuge.
- Record the number of fishing guides distributed.
- Record the number of attendees to fishing event.
- Record the number of offsite locations receiving information.

- Record the amount of monofilament collected from the recycling station.
- Have refuge law enforcement officers ensure that anglers possess the proper license requirements.

Objective B2.6 (Shellfishing)

Allow refuge visitors to harvest subterranean shellfish (softshell clams, quahogs, and razor clams) using non-mechanized hand raking tools only and no artificial means of extraction (such as salt and chlorine), in accordance with Town of Chatham Shellfishing Rules and Regulations or additional refuge regulations.

Rationale

In alternative B, we would officially open the refuge to non-mechanized harvest of subterranean species (softshell clams, quahogs, and razor clams) and scallops (see objective B2.5.) To the best of our knowledge, razor clam harvesting is not currently occurring on the refuge. However, razor clams have historically been harvested on the refuge and may be again in the future, as regional conditions change.

We would not open the refuge to the harvest of mussels. Mussels are an important food source for many migratory birds and we would provide additional protection for priority wildlife species by not allowing harvest of these species. For example, blue mussels are the most important food item during the winter for common eiders (a Service focal species) congregating in Nantucket Sound (MA DFG 2006). Mussel spat is also one of the most important food items for southward migrating red knots (a candidate species) using Cape Cod from July through October (Harrington et al. 2010b). Mussels are a common food of American oystercatchers as well; they typically visually site these prey in slightly submerged shellfish beds (<http://amoywg.org/american-oystercatcher/food-habits/>; accessed March 2013). Harvest techniques generally utilized for non-subterranean shellfish are so efficient that we are concerned that shellfish beds could be depleted. If additional information becomes available about the importance of subterranean shellfish species to priority wildlife species, we would reevaluate this objective.

Alternative B takes a more proactive approach to minimizing disturbance to migrating and staging birds on the intertidal flats. The rationale in alternative B, objective B1.7, discusses the importance of minimizing human disturbance to shorebirds, but here we include a discussion specific to shellfish harvesters and harvesting activity. Shellfish harvesters, like all refuge users, may cause disturbance to birds using intertidal habitats on the refuge. However, shellfish harvesters spend most of their time bent over at the waist or on hands and knees harvesting patches of shellfish, and traverse the exposed mudflats only to move among patches (Burger 1981, Leavitt and Fraser 2004). They generally spend less time traversing mudflats than other users, such as bird watchers, anglers, and beachcombers, who also occupy these mudflats.

Previous research has shown that shorebirds reduce their foraging rates, flush more easily, and abandon areas with increased human presence (Burger 1981, Burger and Gochfeld 1991b, Lafferty 2001a, 2001b; Thomas et al. 2003), and that the degree of shorebirds' response varies with different anthropogenic activities (Burger 1981, Burger 1986, Pfister et al. 1992, Lafferty 2001b). Fast-paced activities involving rapid movements, such as jogging, were more likely to disturb waterbirds than slow-moving activities, such as worm and clam harvesting (Burger 1981). Studies conducted at Monomoy refuge also provide evidence that shorebirds tolerate slow moving or stationary shellfish harvesters at much closer distances than they tolerate pedestrians traversing intertidal habitat (Koch and Paton in prep, Leavitt et al. 2010). However, if seasonal, dynamic closures are implemented, as discussed in alternative B, objective B1.7, they would apply to all users.

Shellfishing can also alter benthic communities or impose direct competition for shorebirds that feed on target organisms. For example, mechanical harvesting of cockles in South Wales resulted in their decline, and although shorebird foraging rates increased immediately following harvesting as birds took advantage of newly exposed prey, subsequent declines of bird activity lasted 50 days for Eurasian oystercatchers and 80 days for Eurasian curlews and various gull species (Ferns et al. 2000). Sediment disturbance associated with commercial harvest of bloodworms in the Bay of Fundy negatively impacted populations of mud snails, which is the primary prey of southward migrating semipalmated sandpipers (Shepherd and Boates 1999).

Softshell clams inhabit intertidal and shallow subtidal mudflats where shorebirds often forage (Leavitt and Peters 2005). While shorebirds reduce their foraging rates, flush more easily, and abandon areas with increased human presence (Burger 1981, Burger and Gochfeld 1991b, Lafferty 2001a, Thomas et al. 2003), the degree of shorebirds' response varies with different human activities (Burger 1981 and 1986, Pfister et al. 1992, Lafferty 2001b). At a non-breeding site in California, stationary people along the beach disturbed shorebirds less frequently (and fewer birds overall for each disturbance) than did mobile people (Lafferty 2001b).

Softshell clam harvesters in coastal New England typically use short hand-rakes, spend most of their time bent over at the waist or on hands and knees harvesting patches of shellfish, and traverse the exposed mudflats only to move among patches (Burger 1981, Levitt and Fraser 2004). Additionally, anecdotal observations of shorebirds congregating in recently shellfished areas at Monomoy refuge (Leavitt and Peters 2005, Koch 2010) led to the hypothesis that sediment turnover associated with softshell clam harvesting may expose additional prey for shorebirds that would normally be at unavailable depths, thereby providing a net benefit to foraging shorebirds (Leavitt and Peters 2005).

We tested this hypothesis by conducting surveys of shorebirds in areas that had been and not been shellfished since the last tidal inundation from August to November 1, 2007. For shellfished areas, we quantified the total area that had been shellfished. For each shorebird present in the survey area, we recorded the behavior when it was first seen (foraging or other) and if it was observed foraging in shellfishers' holes or sediment piles adjacent to holes. The mean density of most shorebird species was not dependent on the percent area shellfished, but the mean density of American oystercatchers and ruddy turnstones was positively related to the percent area shellfished. The increased abundance of these species in shellfished areas probably reflects increased foraging opportunities that outweigh the risks of closer approaches to humans. The presence of shellfish holes and sediment piles is likely appealing to American oystercatchers that frequently feed on shellfish (Nol and Humphrey 1994). It also likely complements ruddy turnstones' foraging strategy of flipping objects and digging deep into sediment with their bills and heads (Nettleship 2000, Paulson 2005).

We did not detect any differences in the proportion of birds that were foraging in shellfished and non-shellfished areas, but observations in shellfished areas showed that most species foraged in shellfish holes or on sediment piles (Koch and Paton, in prep.). Based on this data, we conclude that the hand harvest of shellfish, if conducted as described here, can provide a benefit to certain migratory birds by expanding their access to prey.

We would also start to enforce the existing prohibition on the use of wheeled carts and other mechanical transport in the Wilderness Area. The Wilderness Act prohibits the use of mechanical transport in Wilderness Areas. Mechanical transport (610 FW1 1.5) includes, but is not limited to, sailboats, hang gliders,

parachutes, bicycles, carts, and wagons (it does not include wheelchairs used by individuals with disabilities that require wheelchairs).

Strategies

Continue to:

- Allow the harvest of softshell, quahog, and razor clams using non-mechanized, hand methods year-round following State and Town regulations.

Within 1 year of CCP implementation:

- Coordinate with the Mass Division of Marine Fisheries and the town of Chatham Shellfish Warden to review annual use, obtain harvest records, and promote and ensure the sustainability of the shellfish resource on the refuge.
- Ensure information about the refuge's prohibition on the use of salt or chlorine or other artificial means of extraction to harvest razor clams is transmitted to local clammers.
- Start to enforce the existing prohibition on the use of wheeled carts and other forms of mechanical transport in Monomoy Wilderness.
- Prohibit bottom substrate disturbing fishing activities such as mussel harvesting, scallop dragging, or any hydraulic dredging for shellfish within the Declaration of Taking refuge boundary.
- Coordinate with the Town of Chatham Shellfish Warden to ensure all permitted shellfishers using Monomoy refuge acknowledge being provided with information about the refuge purpose and mission, regulations, seasonal closures, and wilderness ethics and stewardship.

Within 3 years of CCP implementation:

- Update the refuge fishing plan and regulations to allow the hand harvest of subterranean shellfish using methods that preserve wilderness character. Do not allow extractive methods such as salt or chlorine.

Monitoring Elements

- Record the number of annual resident and non-resident shellfish harvest permits issued by the Town of Chatham Shellfish Warden.
- Monitor harvest numbers to as an indicator of potential threats to softshell clam and quahog resource sustainability by tracking harvest pressure (numbers and take) to determine if it meets refuge compatibility.
- Formulate additional guidelines or regulations, if needed, that further protect species and habitats of concern and sensitive areas, preserve wilderness character, and conduct public guidance/review.
- Monitor impacts to wildlife, particularly staging shorebirds such as red knots, and nesting shorebirds such as American oystercatchers.

Objective B2.7 (Waterfowl Hunting)

Officially open up to 40 percent of the refuge within the Declaration of Taking to waterfowl hunting in accordance with Federal law and Massachusetts regulations.

Rationale

Waterfowl hunting has regularly occurred within the Monomoy NWR Declaration of Taking-Marine Protected Area boundary since the refuge was established. However, all areas included in the National Wildlife Refuge System

are closed to public access until and unless we open the area for a use or uses in accordance with the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee) and the Refuge Recreation Act of 1962 (16 U.S.C. § 460k-460k-4). Monomoy NWR has never been opened for fishing or waterfowl hunting by regulation, individual permit, or public notice as required by law.

Providing compatible wildlife-dependent recreation and educational activities on units of the National Wildlife Refuge System is a priority of the U.S. Fish and Wildlife Service. The National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. § 668dd et seq.) provides authority for the Service to manage the refuge and its wildlife populations. In addition, it declares that compatible wildlife-dependent public uses are legitimate and appropriate uses of the Refuge System and are to receive priority consideration in planning and management. There are six wildlife-dependent public uses: hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. The Improvement Act directs managers to increase recreational opportunities, including hunting, on national wildlife refuges when compatible with the purposes for which the refuge was established and the mission of the Refuge System. Increasing hunting opportunities on portions of the area administered by the refuge would allow management of waterfowl populations at acceptable levels, provide more wildlife-dependent recreational opportunities for the public, and promote better understanding and appreciation of refuge habitats and their associated fish and wildlife resources. Implementation of the proposed actions would be consistent and compatible with the Refuge Recreation Act, Refuge Administration Act, and the Monomoy NWR Comprehensive Conservation Plan.

Providing hunting and fishing opportunities addresses the mandates of Executive Order 12996 and the Refuge Improvement Act by providing the public with an opportunity to engage in wildlife-dependent recreation. Hunting is recognized by the Service as a traditional form of wildlife-related outdoor recreation. We anticipate a low degree of hunting pressure to occur as a result of officially opening the refuge for these activities.

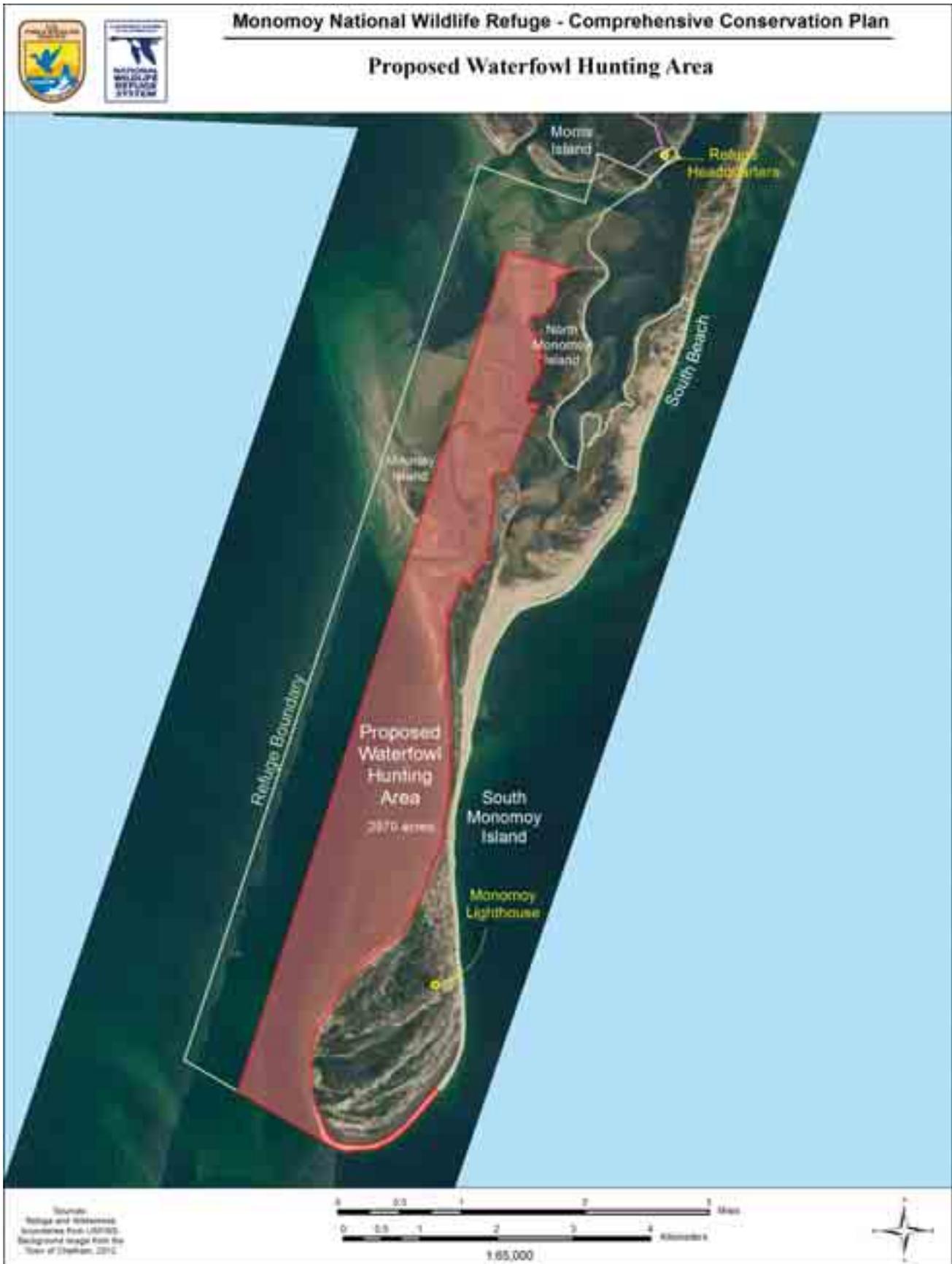
The refuge weighs a number of factors in opening an area to hunting or fishing, including safety considerations. The refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting activity, recommend that the refuge be closed to hunting, or further liberalize hunting regulations within the limits of State and Federal regulations. Restrictions would occur if hunting becomes inconsistent with other higher priority refuge programs or endangers refuge resources or public safety. The approximate area we propose to open to waterfowl hunting is presented in map 3.1.

Patrols by refuge law enforcement officers would enforce Federal and State hunting regulations. Enforcement patrols may also be conducted by Massachusetts Environmental Police officers. The frequency of patrols would be determined by hunter use, the level of compliance observed during patrols, and information obtained from participants, visitors, and other sources. Refuge brochures and hunter orientation prior to the hunting seasons would emphasize refuge specific regulations, safety considerations, and the protection of wildlife species found on the refuge.

Strategies

Within 3 years of CCP implementation:

- Develop a hunt opening package, conduct NEPA analysis and public review, and develop a hunt plan; develop monitoring strategies to measure change, measure achievement of objective, and evaluate the hunt program; modify or restrict access, or adapt management strategies as warranted.



- Open a portion of Monomoy NWR to waterfowl hunting in accordance with Federal, State, and local hunting regulations. There will be no fee for individual permits but there will be a minimal processing fee charged by the third party vendor that issues refuge hunt permits.
- Require all commercial hunting guides providing guiding services within North Monomoy Island and South Monomoy, including wilderness and non-wilderness areas, to apply for and receive a special use permit to conduct guiding on the refuge (50 CFR 27.97). The fee for this special use permit would not be less than \$100 or more than \$500, with all monies minus administration costs to enhance the hunting program and the hunters' experience.

Monitoring Elements

- Record the number of special use permits issued.
- Record the number of each species harvested.
- Record the number of individual waterfowl hunt permits issued.

REFUGE GOAL 3:

Communicate and collaborate with local communities, Federal and State agencies, and conservation organizations to promote natural resource conservation and support the goals of the refuge and the mission of the U.S. Fish and Wildlife Service.

Objective B3.1 (Public Outreach)

Over the next 10 years, expand public information dissemination efforts with a target of annually reaching 100,000 people, and participate in at least five offsite opportunities within the local community or the outer Cape region so residents and visitors can learn about the refuge's unique coastal barrier ecosystem, the Refuge System, and the National Wilderness Preservation System.

Rationale

The Service is America's voice for wildlife, speaking for the wild creatures that cannot speak for themselves. To be effective, we must do so in a way that provokes public understanding and support (USFWS 1997). Outreach is two-way communication between the Service and the public to establish mutual understanding, promote involvement, and influence attitudes and actions, with the goal of improving joint stewardship of our natural resources. Communication is essential to the refuge resource mission. Good communication builds understanding, and helps the public make informed decisions about the future of fish and wildlife resources and support the actions of the refuge.

This objective focuses on achieving such positive awareness for the refuge through better communication. Although the refuge must manage many controversial issues, it also enjoys significant strengths, including dedicated staff and volunteers, and strong public interest in fish and wildlife. To meet the refuge's challenges and leverage its strengths, the strategies under this objective recommend a more unified and strategic communications program that would help the refuge carry out its resource conservation mission. Our approach is to make the most effective use of staff time and resources by focusing our messages into something people can easily understand, and making sure that message is delivered to concerned people in a timely manner.

Local businesses that cater to the users of Monomoy NWR are important potential constituents who can help promote responsible, nature-based tourism, provide guidance on the area's sensitive natural resources, and encourage responsible behavior around sensitive wildlife habitats and populations and within wilderness. We would promote the refuge and provide information at partner locations, such as the Chamber of Commerce, public library, Marconi

Maritime Museum, Salt Pond Visitor Center at Cape Cod National Seashore, Cape Cod Museum of Natural History, Nickerson State Park, Massachusetts Audubon Society's Wellfleet Bay and Long Pasture Sanctuaries, U.S. Coast Guard Heritage Museum, Provincetown Center for Coastal Studies, Woods Hole Oceanographic Institution, Waquoit Bay National Estuarine Research Reserve, New England Aquarium, and other applicable locations.

Strategies

Continue to:

- Update and print brochures and rack cards and make them available to the Chamber of Commerce and tourist attractions.
- Use Internet resources to inform the public about the refuge, its mission, and management actions.
- Issue press releases to inform the public about refuge activities, respond to media inquiries, and publish our accomplishments on-line.
- Give presentations about refuge management actions and wildlife at venues such as the Cape Cod Natural History Conference.
- Occasionally participate in local festivals and parades.
- Work with the Friends group and volunteers to increase refuge activities and funding opportunities.
- Speak about the refuge and its purpose to local service and civic organizations and conservation partners throughout the region.

Within 1 year of CCP implementation:

- Promote an outreach campaign (already initiated by the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, International Wildlife Coalition, and Cape Cod Stranding Network) to provide information to all visitors about the importance of abiding by the Marine Mammal Protection Act and minimizing disturbance to marine mammals. The outreach message would focus on a recommended viewing distance of at least 150 feet to allow marine mammals undisturbed resting and foraging areas critical for survival.

Within 5 years of CCP implementation:

- Develop and distribute rack cards and refuge brochures throughout Chatham and neighboring towns to increase awareness of the refuge, its importance to federally listed threatened and endangered species, opportunities for refuge visitors, and the Monomoy Wilderness.
- Provide and maintain refuge informational displays at other frequently visited refuge partner locations.
- Initiate an outreach campaign to provide information to all visitors about the importance of minimizing disturbance to migrating and staging birds. The outreach message would focus on a recommended viewing distance of at least 50 m to allow birds to remain undisturbed in their resting and foraging areas critical for successful migration.

Within 7 years of CCP implementation:

- Deliver refuge information through select video clips or live-streaming, real-time wireless wildlife camera images.

- Develop tools to conduct outreach on refuge issues and updates via modern technology such as text messages, virtual tours, podcasts, and smartphone applications.
- Work with birding clubs to disseminate refuge information, and retrieve any sighting information from such clubs.

Monitoring Elements

- Record the number of press contacts and press releases made annually.
- Record the number of attendees at offsite presentations and community events.
- Record the number of people visiting and receiving information through social media venues (e.g., Facebook “Likes”).
- Record the number of brochures and rack cards printed each year.
- Record the number of visits to refuge Web site.

Objective B3.2 (Community Support)

Over the life of the plan, with the aim of increasing the public’s understanding of our purpose and management activities, support the Friends group and volunteers, increase refuge partnerships, and take other actions to improve refuge communications and effectiveness by increasing volunteer hours and the number of partnerships by 50 percent.

Rationale

Greater outreach efforts would increase recognition of the refuge, the Refuge System, and the Service among neighbors, local leaders, conservation organizations, and elected officials. We would strive annually to increase outreach efforts toward the local citizenry. This publicity would also help generate support for similar conservation efforts in the region.

It is particularly important that local residents understand, appreciate, and support the Refuge System mission and this refuge’s unique contribution to that mission, concurrent with wilderness stewardship. In addition, our volunteer program could grow and our Friends group could see enhanced membership and support. The proposed relocated refuge headquarters and visitor contact facility would serve as an important resource for refuge visitors and local community, providing educational and recreational opportunities and meeting and exhibit space for local conservation organizations.

At times, the refuge staff will make decisions that are not endorsed by the general public and the local community. However, management decisions are based on science and Service policy and regulations, regardless of their popularity with the public. It is important to maintain regular communication to inform and update the public about refuge actions. While not everyone will necessarily support our actions, we want to be sure that the reasons for our actions and decisions are explained. We hope to achieve informed consent, which ensures that because stakeholders understand our issues and actions, they do not oppose them. Participation beyond informed consent involves those who are actively engaged with the refuge through volunteering, supporting funding, and attending programs and events. An even higher level of community support is expressed in the establishment and maintenance of a refuge Friends group. Ultimately, it is the goal of the refuge staff to have an active Friends group that can assist in garnering public support for the refuge.

Gaining support for refuge programs from the local community, private landowners, conservation groups, congressional, State, and local elected officials is essential for us to meet 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 these individuals the importance of refuge lands to current and future generations of Americans.

Refuge Friends groups play a vital role in supporting the mission of a refuge, providing volunteers and community support. The Friends of Monomoy, a registered 501(c)(3) nonprofit corporation, is an important part of the refuge, providing some financial support for interpretation and habitat management projects on the refuge. The Friends of Monomoy reorganized and reestablished itself in 2011, and is growing membership and revenue sources to help further the refuge purpose and Service mission.

In 2011, people conducting wildlife management, habitat management, public use, or maintenance activities contributed nearly 5,300 volunteer hours to Monomoy NWR. New community partnerships such as with the American Lighthouse Foundation, which resulted from the restoration efforts on the historic Monomoy Point Light Station, can provide expanded community support for refuge programs and activities.

Strategies

Continue to:

- Recruit, train, and guide volunteer efforts on the refuge.
- Maintain a productive relationship with the Friends of Monomoy; ensure they understand the refuge mission and actively support refuge activities.
- Implement current Friends and volunteer policies according to Draft Friends Policy 633 FW 1-4 and National Wildlife Refuge System Volunteer and Partnership Enhancement Act of 1998 October 5.
- Maintain a volunteer database.
- Encourage establishing a local chapter of the American Lighthouse Foundation to support future maintenance and conduct interpretation at the historic Monomoy Point Light Station.

Within 2 years of CCP implementation:

- Develop and implement volunteer position descriptions to increase volunteer opportunities.

Within 10 years of CCP implementation:

- Collaborate with the Friends of Monomoy to create a jointly staffed visitor contact facility in Chatham or Harwich that allows visitors to receive information on what nature-based opportunities are available in the local area, know where to go, and make whatever arrangements and contacts needed for their visit.

Monitoring Elements

- Record the number of volunteers and volunteer hours contributed annually.
- Track number of members of the Friends group.
- Record the number of organizations partnering with Monomoy NWR.
- Record the number of individuals participating in the Monomoy Point Light Station history interpretative tours and programs, both off and onsite.

- Record the number of volunteer position descriptions created.
- Record the number of events and number of participants at each event.

REFUGE GOAL 4:

Ensure the spirit and character of the Monomoy Wilderness are preserved.

Objective B4.1 (Wilderness Implementation and Designation)

Manage the Monomoy Wilderness to enhance its wilderness character and values, in a manner consistent with refuge establishment purposes (migratory birds and endangered species recovery) and the Refuge System mission.

Rationale

Wilderness is a congressionally designated land use. As defined by the Wilderness Act, wilderness is untrammeled (free from human control), undeveloped, and natural, and offers outstanding opportunities for solitude and primitive recreation. The National Wildlife Refuge System manages refuge wilderness to simultaneously secure an enduring resource of wilderness and accomplish refuge purposes in a way that preserves wilderness character. The Service is responsible for ensuring that the Monomoy Wilderness retains its primeval character and influence, without permanent improvements (except for the light house, which Congress acknowledged in 1970 needed to be preserved) or permanent human habitation, and its natural conditions are preserved. The Service is to manage the Monomoy Wilderness so visitors will experience an area affected primarily by the forces of nature where the imprint of humans in their immediate surroundings is substantially unnoticeable; find outstanding examples of ecological, geologic, scientific, educational, scenic, or historic features; and can seek and experience solitude or primitive and unconfined recreation.

As in alternative A, refuge management activities in the Inward Point and Powder Hole inventory areas would remain largely unchanged from those employed since the 1970 designation of the adjoining Monomoy Wilderness. Maintaining the historic light station structures may require periodic mechanized transport or motorized equipment use, and access to the worksite along a temporary overland trail or road through the Monomoy Wilderness. We would analyze all activities associated with light station upkeep and determine, through use of the minimum requirements decision guide process, how to minimize impacts on the Monomoy wilderness.

As mentioned under Conducting Resource Management and Public Use Activities Consistent with Wilderness Principles, we will complete minimum requirements analyses as needed during the plan period for refuge administrative and management activities conducted within wilderness that are essential to fulfilling the purposes (migratory birds endangered species recovery) of the refuge to ensure they are the minimum necessary.

Strategies

Continue to:

- Manage the Monomoy Wilderness for naturalness, wildness, and outstanding opportunities for solitude or primitive and unconfined recreation by managing refuge operations and visitor uses in a manner that protects wilderness character.
- Continue managing the Inward Point and Powder Hole non-wilderness areas to maintain or enhance their size, naturalness, and opportunities for solitude or primitive and unconfined recreation throughout the 15-year plan period, to the extent that it will not prevent fulfilling refuge establishment purposes or the Refuge System mission (610 FW).

- Use the appropriate response to unplanned wildfire ignitions that provides for public and firefighter safety while recognizing periodic fire as a natural process with long-term benefits to an enduring wilderness resource.
- Where fire exclusion or other human-caused alterations of natural coastal processes have led to unnatural wildland fuel and vegetation conditions, apply prescribed fire to restore a more natural fire regime or migratory bird or endangered/threatened species habitat conditions within the Monomoy Wilderness.
- Maintain wilderness boundary signs at three locations (two boat landings and on Nauset/South Beach).
- Implement management activities that involve temporary rather than permanent uses or site occupancy, that create no new surface disturbance, do not involve placement of permanent structures or installations (e.g., temporary symbolic fencing), or use motorized equipment or mechanized transport unless it is the minimum tool possible.
- Provide refuge staff with wilderness stewardship training appropriate for their positions.
- Review all refuge management activities proposed within the Monomoy Wilderness and the Inward Point and Powder Hole inventory areas through the 15-year plan period to ensure they are consistent with wilderness management; use the minimum requirements analysis process presented under Actions Common to All Alternatives.
- Assess current wilderness character (untrammled, undeveloped, natural, outstanding opportunities for solitude or primitive and unconfined recreation, and other features/unique attributes) within the Monomoy Wilderness.

Within 2 years of CCP implementation:

- Create and post an additional wilderness information station or kiosk at the Monomoy Point Light Station.
- Create additional materials, offer public programs, and distribute information about wilderness to target audiences to raise awareness of the wilderness designation and wilderness ethics.

Within 3 years of CCP implementation:

- Complete a wilderness stewardship plan for the Monomoy; establish thresholds of acceptable change to resources resulting from public use; develop monitoring strategies to measure change, measure achievement of objectives, and evaluate visitor experiences.
- Work with regional airports and the Federal Aeronautics Administration (FAA) to increase pilot awareness of the 2,000-foot flight ceiling restriction over the Monomoy wilderness.

Within 5 years of CCP implementation:

- Explore opportunities with Arthur Carhart Center to recruit a wilderness ranger and develop programs that promote Wilderness Act principles, such as wilderness education workshops for local/regional educators.

- Explore the feasibility of a wilderness access pass and implement, if practicable, the minimum access pass program; use as a means of educating and informing the public about the wilderness-designated lands and waters on the refuge, refuge wildlife, and management actions, and appropriate use by visitors while in refuge wilderness; limit the number of people allowed at one time in an effort to maintain the solitude character of the Monomoy Wilderness.
- Explore the option of creating a smartphone application with Monomoy Wilderness coordinates and information about the wilderness designation.

Monitoring Elements

- Maintain a listing of completed minimum requirement analyses for the refuge, and document the annual minimum requirement analysis review process.
- Record the number of staff receiving wilderness orientation and number of training records for all refuge staff, volunteers, and interns.
- Record the number of educators completing wilderness education teacher workshops.

REFUGE GOAL 5:

Objective B5.1 (Archaeological Resources and Historical Structures)

Protect cultural resources that exist on the refuge.

Prevent the loss of cultural resources on Monomoy NWR when possible over the next 15 years, in keeping with the Service's legal responsibility (under sections 106 and 110 of NHPA) to identify, evaluate, and preserve all cultural resources and historic properties on the refuge. To the extent that it is prudent and feasible within the context of projected sea level rise and climate change, protect and preserve Native American and historical archaeological resources on Monomoy NWR that are threatened by coastal erosion. Protect and preserve significant archaeological resources threatened by proposed ground-disturbing activities or subject to potential artifact looting. Maintain the Monomoy Point Light Station (listed on the National Register of Historic Places) to meet the historic preservation standards of the Secretary of the Department of the Interior.

Rationale

The Service has a legal responsibility, under section 106 of the National Historic Preservation Act, to consider the effects its actions may have on cultural resources, and to enforce all Federal cultural resource protection laws and regulations on refuge lands, including the preservation of structures listed on the National Register of Historic Places. Considering the topography of the area and its proximity to inter-tidal areas and estuaries, additional archaeological sites may be found in the future. Some archaeological sites probably were located in areas already inundated by rising seas (following the last ice age) or have vanished due to the dynamic nature of coastal barrier islands. The remains of historic shipwrecks may also be revealed in the intertidal zone. Protections extend not only to those cultural resources on refuge lands, but also to resources on land affected by refuge activities.

Within this alternative, we propose to maintain the National Register light station structures in place in perpetuity, which requires annual maintenance and periodic major repairs and refurbishments that may require mechanized or motorized transport and equipment use and access through the Monomoy Wilderness to the worksite.

Strategies

Continue to:

- Comply with section 106 of the National Historic Preservation Act prior to conducting any ground-disturbing activities on the refuge; compliance may entail any combination of State Historic Preservation Officer or Tribal Historic Preservation Officer consultation, literature survey, or field survey.
- Identify, evaluate, and conduct archaeological evaluation, with subsurface testing as necessary, for any project where ground-altering activity is proposed.
- Enforce all Federal cultural resource protection laws and regulations including the necessary provisions of Archaeological Resources Protection Act to protect cultural resources on the refuge.
- Conduct structural and basic maintenance on the Monomoy Point Light Station to comply with historic preservation standards.
- Develop and implement throughout the plan period a historic site management plan for the Monomoy Point Light Station structures and associated archaeological structures, following National Historic Preservation Act sections 106 and 110 and 36 CFR Part 800 collaborative procedures; the plan would provide for systematic mitigation over time of the adverse effects from natural weathering, erosion, and decay processes.

Within 1 year of CCP implementation:

- Develop a memorandum of agreement (MOA) collaboratively with the State Historic Preservation Officer and Advisory Council on Historic Preservation that identifies the steps the Service will take to systematically reduce, avoid, or mitigate the adverse effects from natural weathering, erosion, and decay processes on the Monomoy Point Light Station structures and associated archaeological structures.
- Update the 2010 minimum requirements analysis that addresses the need for periodic motorized equipment access through the Monomoy Wilderness to the Monomoy Point Light Station for the purposes of major repairs or refurbishment.
- Establish a protocol with the Massachusetts Board of Underwater Archaeological Resources for examination and assessment of historic shipwreck remains that may appear.

Within 5 years of CCP implementation:

- Develop a cultural resource management plan for the archaeological sites and historic structures on the refuge that includes periodic monitoring of known archaeological sites.
- In accordance with National Historic Preservation Act section 110, conduct proactive archaeological surveys to determine the limits and integrity of the Whitewash Village archaeological site group on South Monomoy, and assess the conditions of known Native American sites on Morris Island.
- Establish a law enforcement protocol for any unexpected discovery of human remains due to erosion.

Within 10 years of CCP implementation:

- Once interior construction within the building is complete, allow public use during daylight hours of the Monomoy Point Light Station; implement interpretive signs, day and virtual tours, etc., to support the interest of the public in this nationally significant historic resource.

Monitoring Elements

- Maintain a log of all National Historic Preservation Act section 106 compliance actions and archaeological surveys conducted prior to proposed ground-disturbing activities.
- Record the number of cultural resource protection violations that are detected or investigated in accordance with the Archaeological Resources Protection Act.
- Monitor erosion damage or threat of erosion to recorded sites and report any newly revealed sites, including historic vessel remains.

REFUGE GOAL 6:

Develop and maintain a diverse and inclusive workplace with sufficient resources, including infrastructure and equipment, to work productively toward fulfilling the refuge mission.

Objective B6.1 (Staffing)

Over the next 15 years, fill seven additional permanent full-time positions and continue to employ seasonal and term biological staff and interns to implement the activities outlined in alternative B (see appendix G for staffing chart proposed under alternative B). Provide a diverse and inclusive workplace through annual training, support, and awareness.

Rationale

Although volunteers are an integral part of making many refuge programs possible, additional staffing is needed under this alternative to consistently complete the additional workload required to reach the expanded objectives proposed in alternative B. A 2008 national staffing model for the National Wildlife Refuge System indicated that Monomoy refuge, due to its location, size, number of visitors, and complexity of its biological program, should have a permanent staff of nine full-time employees. Funding levels have never been sufficient to achieve that staffing level, and immediate budgets are not likely to provide the funding needed to fully meet our responsibilities under Federal law to protect wildlife, serve the American public, and maintain our facilities. Nevertheless, with any additional staff increase, we will provide more services and implement more resource actions, depending on the type of position filled.

In 2011, the Service released a Diversity and Inclusion Implementation Plan. It sets four strategic goals as follows:

- (1) Highlight diversity as a core value.
- (2) Establish partnerships, sources, and feeder systems.
- (3) Recruit and hire a diverse and highly skilled workforce.
- (4) Maintain a highly skilled diverse workforce through talent management.

We recognize that a workforce is more innovative, resourceful, and productive when it includes a diversity of skills, perspectives, ideas and backgrounds. Diversity is a permanent commitment of the Service and resources, including time, money and people, will be dedicated to creating and maintaining a diverse and inclusive workplace. An inclusive workplace is one where all employees feel

they are part of a team with open communication, they are treated with respect and fairness, and they can develop to their full potential.

Strategies

Continue to:

- Recruit and employ seasonal and term biological, visitor services, wilderness staff, interns, and volunteers.
- Work with organizations such as the Student Conservation Association and the Federal Pathways program to hire talented young college students for seasonal intern positions.
- Provide a safe environment at work that promotes diversity and inclusion.
- Seek grants and funding partnerships to support additional staff.
- Request additional staffing as funding becomes available.
- Provide relevant staff training opportunities to increase work skills and increase understanding of diversity and inclusion.

Within 15 years of CCP implementation:

- Change an existing General Biologist (GS-0401-09) to a Wildlife Refuge Specialist (GS-0401-09/11) position.
- Fill one Visitor Services Manager position.
- Fill one Visitor Services Specialist.
- Fill one Maintenance Worker/Boat Operator position.
- Fill one Administrative Assistant position.
- Fill two Park Ranger-Law Enforcement positions.
- Fill one Biological Science Technician position.

Monitoring Elements

- Record the number of temporary, term, and permanent staff.
- Record the number of volunteer hours.

Objective B6.2 (Facilities and Maintenance)

Over the life of the plan, ensure that offices, support facilities, and other infrastructure are sufficient for staff and volunteers; ensure the expanded programs and activities of staff and volunteers are provided for and maintained while sharing a headquarters site co-located with National Weather Service facilities.

Rationale

Adequate, properly functioning facilities are needed to support staff, volunteers, the visiting public, and the co-located National Weather Service upper air sounding operations. Current space is barely able to accommodate alternative A staffing plus co-location of visitor contact station and headquarters staff offices during the peak (April to October) field and visitation seasons. This peak season also coincides with very high seasonal rental rates. The Cape Cod region has very high housing costs, and affordable seasonal rental rates in the outer Cape are in very short supply. Refuge-provided housing is and will remain essential to the refuge's ability to recruit the best-qualified candidates for our positions

by offsetting housing costs. Expanding current infrastructure at Morris Island headquarters, such as a second story on the office, or establishing an alternative visitor contact station in the local community would help alleviate the crowding that would occur with increased staff.

The National Weather Service, an agency within the Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) has been co-located with the refuge at the Morris Island administrative complex since 1971, with this joint tenancy expected to continue at least through the plan period. A memorandum of understanding guides the dual use of the Morris Island facilities. The current refuge headquarters/visitor contact station building was first constructed and occupied as an administrative office for the Environmental Science Services Administration, forerunner to the National Weather Service. Weather Service personnel launch radiosonde-equipped weather balloons at least twice daily, observing upper atmospheric conditions and entering them into computer forecast models from which daily weather forecast products are derived. Any facility/infrastructure modifications at the Morris Island site will impact these National Weather Service operations.

The refuge administrative and National Weather Service facilities on Morris Island stand atop an east-facing, eroding coastal bluff. While current erosion rates along this bluff are lessened by the barrier against direct ocean wave action provided by Nauset/South Beach, the forecasted geomorphological changes in the Nauset-Monomoy barrier complex caused by sea level rise suggest a return over the longer term to the active and rapid erosion rates of the past. As recently as the mid-1950s, the historic Chatham Coast Guard Station building used as residential quarters and a signal tower stood near the bluff edge with no outer barrier beach, exposed to the full impact of ocean waves. This structure was demolished in 1959, and portions of the foundation and tile drainpipe now rest mid-slope and at the base, a result of subsequent erosion of the bluff. Expected sea level rise and the resulting geomorphological changes (Giese et al. 2010) point to a progressive westward migration over several decades of what is now Nauset/South Beach across Outermost Harbor and reconnecting to Morris Island. When the westward migration of the protective barrier beach is complete, the Morris Island bluff would once again be exposed to undiminished coastal storm wave energy and rapid rates of erosion. Use of dredge material at the beach would preserve ownership title by the United States and the corridor for visitor use it provides, as previously discussed in chapter 2.

The National Weather Service's white-domed upper air sounding building and current refuge public restroom building (and associated sewage disposal field) stand closest to the edge of the bluff, and would be the first threatened by further bank erosion. This Morris Island property is effectively built out, with little room for facility expansion except vertically. The site presently is operating near or at safe capacity for people and vehicles each June to August, when operational inefficiencies from congestion are already common. Any further reduction in useable space on this small lot without a corresponding reduction in use will create unsafe conditions for visitors and staff, worsen operational inefficiencies, and eventually entirely preclude some critical refuge operations at this site. The potential impact of further erosion of the Morris Island bluff is not a crisis demanding immediate action. However, this planning period is an opportunity for the refuge and National Weather Service to explore options deliberately. Formulating and initiating a thoughtful plan of action to relocate some or all of our water-dependent operations and shoreline access points for refuge visitors to another waterfront site in Chatham and surrounding vicinity would avoid a crisis when the options are fewer and solutions costlier.

The remaining historic Monomoy Point Light Station structures present on South Monomoy, consisting of a lighthouse, a keeper's house, and former oil shed, serve as a reminder of the important role the remote Monomoy Point outpost played in maritime history. Stabilization and historic restoration of these National Register buildings began in 2010. Funding was insufficient to complete the keeper's house renovations, and a deck, heating system, and interior walls are still to be completed. The intent of the project was to prolong the structures while providing additional functionality, especially considering the expanded public uses that are part of interpretive tours. The lightkeeper's house at the light station serves as a summer camp for staff and volunteers, and as equipment storage from April to September. A renewable, solar electric-powered, radiant heating system that maintains interior temperature and humidity levels during the winter season is expected to significantly increase the current interval of 15 to 20 years between major maintenance events. The repairs initiated in 2010 were necessary to preserve the structural integrity and historical appearance of the wood-frame lightkeeper's house. To further aid structural preservation and increase intervals between major maintenance events, onsite renewable electricity generation is needed to power a radiant heat system for interior climate and humidity control in the lightkeeper's house.

Strategies

Continue to:

- Maintain the headquarters/visitor contact station, dormitory/maintenance buildings, and Monomoy Point Light Station to provide a safe working and living environment for refuge staff and volunteers.
- Work with the National Weather Service and maintain an memorandum of understanding with them for use of Service-owned land on Morris Island. Should the Weather Service at any point decide to relocate their existing operation, the refuge would look into re-utilizing the current Weather Service buildings and analyze space and site use at the Morris Island site.
- Maintain a fleet of three highway vehicles and three outboard motor boats that provide safe and efficient transport to North Monomoy Island, South Monomoy, Minimoy Island, and offsite locations for resource management and administrative work; replace boats and motors as necessary to maintain a functional fleet.
- Develop potential partnership with the town of Chatham or U.S. Coast Guard to establish new docks, covered boat storage, and maintenance with secure marine equipment storage and additional parking.

Within 5 years of CCP implementation:

- Conduct a cost-benefit analysis to evaluate the cost of maintaining or renovating existing structures on Morris Island to meet the refuge's future needs, the cost of relocating all facilities to a preferred site, and the option of armoring and its possible impacts to determine the most cost-efficient option the refuge could implement.
- Increase the number of motor vehicles or boats to accommodate staff increases in this alternative as needed.
- Explore additional refuge staff housing opportunities within the local commuting area.

- Explore opportunities to acquire the waterfront Stage Island lot adjoining our current Lot 7b; add storage capability and expand parking for refuge staff.

Within 10 years of CCP implementation:

- Conduct a cost-benefit analysis to evaluate three options: establishing a stand-alone visitor contact station that supports refuge visitor services staff; renovating existing facilities (remodeling of current headquarters/visitor contact station and dormitory/maintenance building) to provide additional office and living space with or without establishing a separate visitor contact station; and acquiring a new headquarters site and funding to relocate the entire refuge operation, including visitor contact station and shuttle parking. This last would include exploring opportunities to co-locate with existing or future refuge partners.
- If cost effective, establish a visitor contact station in Chatham or Harwich (utilizing existing Service standard designs) that accommodates sufficient parking space, workshop space, meeting room, staff and Friends offices, and welcome area, and would include parking and shuttle service to Morris Island.
- If a new visitor contact station is established in Chatham or Harwich, convert the existing headquarters/visitor contact station to support only administrative functions, while maintaining the ability to provide information to visitors who come to Morris Island.
- Until a visitor contact station is established off Morris Island, support the Friends of Monomoy in their efforts to establish a storefront in downtown Chatham or Harwich that would also provide refuge information; this building would not support refuge visitor services staff.

Objective B6.3 (Energy Efficiency)

Move the refuge toward carbon neutrality consistent with the Service's 2010 Strategic Plan for Responding to Accelerating Climate Change by using practices to avoid or minimize greenhouse gas emissions and offset remaining emissions to meet the Service goal of carbon neutrality by 2020. Increase the proportion of electricity consumption derived from clean, renewable sources, while reducing the proportion derived from fossil fuel combustion and associated greenhouse gas emissions, to achieve a smaller carbon footprint at refuge headquarters. Reduce metered, potable (treated) water consumption at refuge facilities. Refuge facilities would themselves demonstrate renewable "green" energy measures, similar to those a residential homeowner, farmer, or small business owner might install, to show refuge visitors and public officials and move refuge operations and facilities toward carbon neutrality by 2020.

Rationale

The strategies that follow are part of a comprehensive effort to incorporate energy conservation technologies into the design of new and remodeled facilities on national wildlife refuges in the Northeast Region of the Fish and Wildlife Service, while simultaneously stimulating economic recovery. Guiding principles and other general information on implementing sustainable practices within the Refuge System can be found in Policy 565 FW 1.

The installation of wind turbines or photovoltaic arrays at the refuge aims to increase the proportion of electricity consumption derived from clean, renewable sources, while reducing the proportion derived from fossil fuel combustion and the associated greenhouse gas emissions, in an effort to create a smaller carbon footprint. Wind turbines or photovoltaic arrays at the refuge facilities would

utilize the available wind and sunlight to generate electrical power at those facilities while reducing power consumption from the utility grid. Installation of a photovoltaic array on South Monomoy would provide electrical power for heat, sanitation, water distribution, hot water, and lights to the Monomoy Point Light Station site without connecting to the utility grid.

A solar-thermal domestic hot water system was added to the shop/dorm building in 2011, and additional thermal insulation was added to the headquarters attic. As new or replacement vehicles and boat motors are purchased, converting to more fuel efficient technologies such as alternative fuel capable models would reduce fossil fuel consumption and associated atmospheric carbon emissions. Driving or using motorboats less, and walking, bicycling, or paddling more, while accomplishing the refuge purposes, would also reduce fossil fuel consumption.

Public water treatment technology needed to ensure public health currently requires high per gallon energy input, and that energy is largely derived from fossil fuel consumption. Not all current refuge water uses (washing/rinsing refuge vehicles, boats, and other equipment) require drinkable/potable water. Collecting and redistributing rainwater can replace a significant proportion of the refuge's current potable (metered) water consumption and associated fossil fuel consumption without risking human health.

The solar panels, wind turbines, and other energy conservation technologies proposed would provide public demonstrations of methods for reducing dependence on nonrenewable energy sources. Established public visitation at the headquarters site also affords a unique opportunity to demonstrate small-scale wind-solar energy systems typical of a residential or small business application while reducing the facility carbon footprint (greenhouse gas emissions) that contribute to global climate change.

Strategies

Continue to:

- Seek renewable energy project assistance through the Federal Energy Management Program to conduct a feasibility study to determine the technical performance of solar panels at the Monomoy Point Light Station.
- Conduct bird and bat surveys at the site of the proposed wind turbine for Morris Island to determine what species are currently using the area.
- Train staff and volunteers about water and energy conservation, purchase materials made with post-consumer content or with built-in solar panels for charging cell phones and other electrical devices in the field, and recycle and reuse materials.
- Maintain recycling and compost bins at refuge facilities.
- Work with local and regional partners seeking funding for alternative transportation measures that reduce fossil fuel consumption and associated carbon emissions by refuge visitors, such as local passenger shuttles with satellite parking, improved highway signs, and improved facilities for pedestrians, bicyclists, and kayakers.

Within 1 year of CCP implementation:

- Reduce metered/potable water consumption by installing rainwater collection and distribution systems at refuge administrative facilities.

- Transition the fleet to use hybrid and electric alternative fuel vehicles and boat motors when feasible to meet the needs of managing the refuge.

Within 3 years of CCP implementation:

- Pursue improvements to preserve the Monomoy Point Light Station structures to extend maintenance intervals; make it more functional, including constructing internal walls and installing drywall to provide privacy for refuge staff stationed there when doing field work on South Monomoy.
- Use the climate leadership in refuges (CLIR) tool to calculate refuge greenhouse gas emissions, and develop and implement actions to reduce the release of these gases from refuge operations.
- Conduct a cost-benefit analysis to determine the most efficient source of alternative energy at the Monomoy Point Light Station and seek funding for installation.

Within 5 years of CCP implementation:

- Prepare a stand-alone NEPA analysis for the installation of a wind turbine to augment the solar thermal tube domestic hot water system installed in 2011 for the refuge headquarters complex on Morris Island.
- If project approved, seek funding to install the wind turbine.

Within 10 years of CCP implementation:

- Assuming approval and funding, install the wind turbine.
- Install an electric car charging station at the Morris Island parking lot.

Monitoring Elements

- Calculate the amount of electricity generated onsite through solar and wind production and as a ratio of electricity usage purchased from the commercial grid.
- Calculate the annual fossil fuel consumption (heat, vehicles, boats, and small engine equipment) for refuge operations.
- Calculate the annual metered/potable water use.
- Estimate the total annual atmospheric carbon footprint for all refuge facilities and operations.
- Submit an annual Environmental Management System management review report that calculates green actions taken during the year, including the amount of waste that is recycled.



Newly hatched piping plover chicks

Yianni Laskaris 2013

Alternative C. Natural Processes

In addition to actions common to all alternatives, alternative C proposes less frequent and intensive management, guided by a philosophy of allowing natural processes and succession of habitats to progress, consistent with preserving wilderness character, and to the extent that it does not compromise refuge purposes and goals. Generally, wildlife and habitat management, and inventories and monitoring efforts would be decreased from alternative A. We would manage the refuge visitor services programs with an emphasis on providing opportunities for wildlife-based recreation that use primitive means and provide solitude, and increased emphasis on non-motorized (paddling or walking) means for accessing the Monomoy Wilderness.

The Natural Processes alternative is summarized under alternative C in table 3.2, which compares the three management alternatives for Monomoy NWR.

Habitat and Population Management

Under this alternative, active habitat management would be decreased compared to those described under alternative A. We would focus on protecting existing habitat for federally listed species, but would reduce our focus on expanding these habitats by allowing natural succession to dominate.

Inventories and Monitoring

There would be decreased inventories and monitoring associated with the decrease in habitat management, and the focus would remain on federally listed species. Monitoring of other high priority species may continue, but efforts would generally be reduced.

Visitor Services

Under this alternative, interpretation opportunities would decline, as all commercial ferry services would be discontinued. A concessionaire system would be established under this alternative but participants would not be allowed to provide motorized transportation to the refuge. We would seek arrangement for non-motorized access to North Monomoy Island and South Monomoy either through a concessionaire or special use permit, as there is still a need to provide access for wildlife-dependent recreational uses on the refuge. Motorized boat access to the Monomoy Wilderness, including the tidal flats and beaches, would not be permitted. All visitor access would be by non-motorized means, such as walking, paddleboarding, or kayaking. Environmental education opportunities would be the same as in alternative A. Passive means for dissemination of public information would increase, as under alternative B. Wildlife observation and photography would be the same as in alternative B. Non-priority use opportunities would be managed as under alternative B. We would explore the feasibility of, and if warranted, institute a wilderness access permit, required for all visitors to North Monomoy Island and South Monomoy, including the intertidal flats and beaches.

Wilderness Management

We would manage the Monomoy Wilderness according to the provisions of the Wilderness Act and Service Wilderness Stewardship Policy (610 FW 1-3) to concurrently accomplish refuge (migratory birds and endangered species recovery) purposes and the Refuge System mission, while also preserving wilderness character and natural values for future generations. Refuge management strategies and techniques would be chosen to comply with wilderness stewardship principles and prevent degradation of wilderness character.

The Inward Point non-wilderness area includes the site of the former Monomoy Branting Club and seasonal camps. The Inward Point area is nearing but not yet free of visual evidence of permanent or human-made structures. While all the camps that were located in this area when excluded from the original wilderness designation have since been removed, utility poles, building foundations, and cisterns still are visible. The Powder Hole non-wilderness area includes the

sites of the former Whitewash Village fishing community, where little evidence remains today, and the former Monomoy Point Lifesaving Service and Coast Guard Stations. In addition, the Powder Hole area also includes the “cherry stem” access trail corridor and approximately 4-acre site of the existing Monomoy Point Light Station buildings, a National Register of Historic Places designated site.

Although these two areas were excluded from the wilderness designation in 1970, Congress intended the Secretary of the Interior to manage the entire area consistent with the concept of wilderness (House of Representatives, Report No. 91-1441) so they will eventually achieve wilderness character and be added to the Monomoy Wilderness. Neither area has yet achieved wilderness character due to the evidence of past human occupation that still remains. Therefore, these two non-wilderness areas are not yet recommended for further study during the plan period as wilderness study areas (WSAs). Significant progress toward achieving wilderness character has been made in both areas since 1970. Continuing to apply wilderness stewardship principles in both areas through the 15-year planning period will bring them still closer to achieving wilderness character, when they may once again be reviewed by the Service for suitability as additions to the National Wilderness Preservation System.

Our management of these areas would not change from how we currently manage them, with the exception that the refuge concessionaire would provide and facilitate non-motorized means to reach the Monomoy Wilderness, and cultural and historic site mitigation measures would be emphasized over structural repairs to the Monomoy Point Light Station structures. We would analyze all activities associated with cultural resource mitigation measures, using the minimum requirements analysis process to determine how to safely and practically conduct them using traditional skills and, if necessary, the minimum tool.

Cultural Resources

Systematic mitigation over time to reduce, avoid, or mitigate the adverse effects from natural weathering, erosion, and decay processes on the Monomoy Point Light Station structures and associated archaeological resources will be implemented following National Historic Preservation Act sections 106 and 110 and 36 CFR Part 800 collaborative procedures. This mitigation could include offsite preservation and interpretation that may require periodic mechanized or motorized transport and equipment use and access to the site through the Monomoy Wilderness.

Refuge Administration

There would be an increase in staffing compared to alternative A, but not to the extent proposed in alternative B. There would be some facility improvements, but to a lesser extent than envisioned under alternative B.

In the discussion that follows, we describe in detail the goals, objectives, and strategies that we would implement under alternative C.

REFUGE GOAL 1:

Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.

Objective C1.1 (Dune Grasslands—Roseate and Common Terns)

Protect from disturbance and degradation 10 acres of nesting habitat for common terns and enhance and maintain 2 acres of prime nesting habitat for roseate terns. Maintain a minimum productivity of 1.0 chick per nesting pair over a 5-year period for both species of terns.

Rationale

In this alternative, we would focus on managing a smaller area for common terns than is currently being managed (10 acres versus 30 acres in alternative A),

but would still aim to provide 2 acres of high-quality habitat for roseate terns. Natural, rather than human processes, would dominate 20 acres of existing common tern habitat within the Monomoy refuge. The reduction in common tern nesting habitat may result in fewer nesting common terns, but the results of our efforts to maintain 2 acres of high-quality roseate tern nesting habitat are comparable to the current efforts for roseate terns under alternative A. All roseate terns nesting in the Northeast do so in conjunction with large, productive common tern colonies (Nisbet 1981), therefore, it is important to maintain some high-quality habitat for nesting common terns as well. Ten acres of quality habitat could still support thousands of nesting common tern pairs. We would maintain an active predator management program to enhance productivity of both species of terns. In contrast to alternatives A and B, the frequency and duration of our presence in and around the tern colony would likely be reduced, as we would no longer maintain a field camp.

Strategies

Upon CCP implementation:

- Use temporary symbolic fencing (see glossary) to seasonally close tern nesting areas from May through August to minimize human disturbance; if no nesting activity occurs within the closed area, posts may be removed beginning July 1.
- Patrol and enforce closed areas during the nesting season.
- Maintain periodic human presence through visits to the colony and surrounding areas generally 3 times per week from mid-May to early August.
- Use temporary portable blinds (similar to photo blinds) that are easily moved throughout the nesting areas to facilitate the collection of nesting data and predator management.
- Install temporary wooden chick shelters for roseate terns prior to nesting to increase chicks' ability to escape inclement weather and predators, increasing survival.
- In areas within the common and roseate tern nesting area, or within 100 m of the nesting areas, destroy all nest attempts by great black-backed and herring gulls by scattering nesting materials and removing eggs.
- Minimize impacts of avian and mammalian predators to nesting terns through non-lethal and lethal management as described in appendix J.
- In selected areas within the 10-acre nesting area, manipulate vegetation using mechanical methods, herbicide, and rotational prescribed burning to improve nesting habitat for terns and discourage nesting by competitor species, including laughing gulls.
- Coordinate with avian disease specialists at the National Wildlife Health Center in Madison, WI, to document, detect, and minimize the spread of avian diseases.
- Review 5-year reviews and recovery plan updates for roseate terns within 6 months of completion to make appropriate changes in management to accommodate updated recovery criteria, research needs, etc.
- Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and would inform future management.

Monitoring Elements

- Conduct complete nest counts refugewide for both species during the Massachusetts Statewide tern census window (currently June 5 to 20) and collect spatial data via a 60×60 m grid system to determine success of management in maintaining suitable habitat.
- Quantify productivity to determine success of management by recording clutch sizes, hatch success, and fledgling success for all nesting roseate terns and approximately 1 to 3 percent of all nesting common terns within the 10-acre nesting area.
- Trap banded roseate tern adults (as time allows), and band chicks to improve fledge success estimates, to document nesting site fidelity, contribute to metapopulation studies, and determine whether Monomoy NWR serves as a sink versus source population.
- Document changes in habitat within the grid system, especially before and after habitat management actions, but at least annually.
- Census laughing, herring, and great black-backed gulls in Area A to track population changes and distribution of predator and competitor species; collect spatial data via a 60×60 m grid for laughing gull nests.
- Monitor nesting attempts of herring and great black-backed gulls in and within 100 m of the tern nesting area.
- Record all predator presence data in and around nesting areas (tracks, scat, loss of productivity, sightings) and conduct nocturnal observations to improve understanding of predator impacts; quantify prey taken by predators through dissection of collected scats and digestive systems of lethally removed predators.
- Conduct a complete census of all gulls on North Monomoy Island and South Monomoy every 10 years using aerial survey method or ground counts.
- Monitor avian health by conducting surveillance to detect field mortality events, documenting observations of sick or dying birds, and identifying, collecting, and submitting dead birds for analysis at the National Wildlife Health Center.
- Update a cover-type map refugewide every 10 to 15 years.

Objective C1.2 (Beach Shoreline and Dune Edges—Piping Plover)

Continue to protect from disturbance and degradation all high-quality nesting habitat and nearby foraging habitat for piping plovers on the refuge. Maintain a minimum productivity of at least 1.24 chicks fledged per pair annually and an average of 1.5 chicks fledged per pair over a 5-year period.

Rationale

In this alternative, management actions would be the same as in alternative B for piping plover, except that we would not evaluate the appropriateness of using dredge material or other habitat alterations to accommodate sea level rise, and electric fencing would not be used. Actions implemented for piping plovers in this alternative would also benefit American oystercatchers and least terns, though there are not separate objectives for these species in this alternative.

Strategies

Continue to:

- Patrol and enforce closed areas during the nesting season.
- Use temporary predator exclosures on piping plover nests that are located in sparsely vegetated areas with nothing obstructing the view of the bird or inhibiting the bird's ability to detect predators.
- Minimize impacts of avian and mammalian predators to nesting piping plovers through non-lethal and lethal management as described in appendix J.
- Strengthen partnerships to manage lands adjacent to the refuge to ensure the success and survival of piping plovers in the surrounding area and create a larger area of continuous protection.
- Review 5-year reviews and recovery plan updates for piping plover within 6 months of completion to make appropriate changes in management to accommodate updated recovery criteria, research needs, etc.
- Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and would inform future management.

Within 1 year of CCP implementation:

- Use temporary symbolic fencing to seasonally close all suitable piping plover habitat regardless of the presence of pairs early in the season (March or April) and seasonally close additional areas that contain breeding piping plovers (May through July) as nesting or courtship behaviors are observed; maintain these areas as closed until July 1 if no nesting has occurred or until chicks have fledged; once these criteria are met, fencing would be removed as staff time allows.
- Participate in partner-based, high-priority, landscape-level piping plover research, which may include resighting banded adults, collecting unhatched eggs for DNA analysis, or evaluating habitat availability as a limiting factor.

Monitoring Elements

- Monitor piping plovers throughout the nesting season to include nest searches in traditional piping plover nesting areas beginning in mid-March; nest visits to monitor and record dates of laying, hatching, or failure, and cause of failure; chick searches to determine survival or first observed flight (Blodgett and Melvin 1996).
- Conduct the piping plover census during the Massachusetts Statewide census window (currently June 1 to 9) and collect spatial data of nest locations to document changes in habitat selection and site fidelity from year to year.
- Record all predator presence data in and around nesting areas (tracks, scat, loss of productivity, sightings); quantify prey taken by predators through dissection of collected scats and digestive systems of lethally removed predators.
- Resight banded adults to contribute to metapopulation studies, and determine whether piping plovers nesting on Monomoy refuge wintered or migrated through the Gulf of Mexico after the Deepwater Horizon oil spill.

**Objective C1.3
(Beach—Northeastern
Beach Tiger Beetle)**

- Monitor shoreline change at least annually using standardized protocols used throughout the Northeast to document changes in sediment erosion and deposition and loss or gain of nesting habitat.
- Update a cover-type map refugewide every 10 to 15 years.

Continue to protect from disturbance and degradation areas currently occupied by northeastern beach tiger beetle adults or larvae with sufficient protected habitat for expansion and genetic interchange (to be determined by future research). Maintain a peak count of at least 500 adults.

Rationale

This objective is the same as alternative A, objective A1.5. We would not actively pursue the use of the Monomoy NWR population as a donor site, but would support this work if led by partners. As in alternative A, we would also support priority research that would enhance recovery efforts.

Strategies

Continue to:

- Maintain vehicle closures on refuge lands to protect habitat and allow for continued population growth. Cooperate with the Town of Chatham, State of Massachusetts, U.S. Coast Guard, and other partners involved in emergency and public safety operations to protect tiger beetles and habitat when vehicle access is deemed essential to protect human life. This includes increased monitoring when vehicles are present to minimize habitat degradation and mortality by over-sand vehicles.
- Regularly inform and communicate with officials and the public about areas occupied by tiger beetles on the refuge, including Nauset/South Beach, to foster continued support for protection and monitoring of tiger beetles currently using these areas and allow for continued expansion of spatial distribution.
- Review 5-year reviews and recovery plan updates for northeastern beach tiger beetles within 6 months of completion to make appropriate changes in management to accommodate updated recovery criteria, research needs, etc.
- Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and would inform future management.

Monitoring Elements

- Conduct site visits once in June and twice weekly in July and August to delineate habitat being used by adult beetles; during these visits, perform low intensity mark-resight efforts to estimate the population and calculate survival probability.
- Conduct larval activity site visits in the late September and early October peak period, to assess reproductive success and delineate larval habitat.
- Monitor shoreline change at least annually using standardized protocols used throughout the Northeast to document changes in sediment erosion and deposition and loss or gain of spawning habitat.
- Update a cover-type map refugewide every 10 to 15 years.

**Objective C1.4
(Intertidal—Migrating and
Staging Birds, Horseshoe
Crabs, and Marine
Mammals)**

Passively oversee up to 2,500 acres of intertidal habitat refugewide to benefit migrating and staging birds, particularly species of conservation concern such as black-bellied plover, piping plover, American oystercatcher, ruddy turnstone, red knot, sanderling, semipalmated sandpiper, dunlin, short-billed dowitcher, roseate tern, and common tern. Continue to prohibit harvest of horseshoe crabs and minimize human disturbance to gray and harbor seals that also rely on these intertidal areas.

Rationale

See alternative A, objective A1.7.

Strategies

Continue to:

- Use temporary symbolic fencing to maintain seasonal closures in portions of intertidal mudflats that are generally established for nesting species to reduce disturbance to staging and migrating birds.
- Work with partners to determine the relative importance of tern staging sites on Cape Cod, identify problematic disturbances, and develop solutions to minimize disturbances.
- Work with partners to document the importance of Monomoy refuge to migrating red knots and contribute to research that will inform species' recovery.
- Maintain and enforce closure of the refuge to horseshoe crab harvesting.
- Work with partners to study movement and embayment site fidelity of horseshoe crabs by tagging 500 crabs annually.
- Participate in State and regional efforts to document changes in populations of horseshoe crabs by conducting spawning surveys on Morris Island, North Monomoy Island, and South Monomoy.
- Work with the Cape Cod Stranding Network to assist with rescues of stranded and entangled marine mammals, and help monitor injured or sick marine mammals.
- Maintain and enforce closure of the refuge to mussel harvesting to preserve food sources for red knots and American oystercatchers.
- Review 5-year reviews and recovery plan updates for roseate terns or other listed species present in this habitat type within 6 months of completion to make appropriate changes in management to accommodate updated recovery criteria, research needs, etc.
- Facilitate and participate in research relevant to this habitat type and priority species when research has recovery and conservation implications and would inform future management.

Within 5 years of CCP implementation:

- Initiate an outreach campaign to provide information to all visitors about the importance of minimizing disturbance to migrating and staging birds; the outreach message would focus on a recommended viewing distance of at least 50 m to allow birds to remain undisturbed in their resting and foraging areas critical to successful migration.

- Annually identify areas refugewide that consistently support foraging or staging red knots or roseate terns, and seasonally close to all human use areas subject to high levels of disturbance.

Monitoring Elements

- Conduct tern staging counts and resight and report color-banded roseate terns on the refuge and Nauset/South Beach to contribute to the study of staging areas and disturbance.
- Conduct post-breeding counts of American oystercatchers on the northern half of the refuge in conjunction with partner efforts, and report color-banded birds through the American Oystercatcher Working Group to better understand Monomoy NWR's importance during migration and staging.
- Resight and report banded shorebirds to bandedbirds.org, with a focus on red knots, during migration periods to contribute to studies on migration pathways, strategies, habitat use, and survival, and to better understand Monomoy NWR's importance during migration.
- Rely on volunteers and refuge partners to conduct International Shorebird Surveys opportunistically during north and south migration on North Monomoy Island and South Monomoy, and report new primary roost sites as they occur on the refuge.
- Conduct partner-led pupping counts and aerial surveys of haulout sites to track use by seals refugewide.
- Monitor and report entangled and stranded marine mammals.
- Obtain aerial photography through collaboration with the Town of Chatham to monitor changes in intertidal habitat at least every 2 years.

Objective C1.5 (Maritime Shrubland, Salt Marsh, Freshwater Ponds, and Nearshore Marine Waters—Biological Integrity, Diversity, and Environmental Health)

Promote biological integrity, diversity, and environmental health (BIDEH) to ensure that the historical, regional, and conservation roles of the refuge are preserved. This objective is broad in intent and may emerge in a variety of ways based on the specific history and role of Monomoy NWR.

Rationale

In alternative C, we do not implement habitat or species-specific objectives for species that are not federally listed. Therefore, objectives that were presented in alternative B for maritime shrubland, salt marsh, freshwater ponds, and nearshore marine water habitats are addressed in alternative C as one objective focused on BIDEH. While achieving our individual refuge purposes and the Service mission, it is important for refuge managers to preserve all habitats and species and to maintain a base level of conservation standards. Under this objective, the refuge would strive to continue to protect all the native species present on the refuge regardless of listing status. This objective serves as an umbrella objective to ensure that BIDEH is maintained on the refuge so the historical, regional, and conservation roles of the refuge are preserved.

BIDEH can be described at various landscape scales, from refuge to ecosystem, national, and international. Each landscape scale has a measure of BIDEH dependent on how the existing habitats, ecosystem processes, and wildlife populations have been altered in comparison to historic conditions. Levels of BIDEH vary among refuges, and often within refuges, over time. Individual refuges contribute to BIDEH at larger landscape scales, especially when they support populations and habitats that have been lost at an ecosystem,

national, or even international scale. In pursuit of refuge purposes, individual refuges may at times compromise elements of BIDEH at the refuge scale in support of those components at larger landscape scales. When evaluating the appropriate management direction for refuges, refuge managers consider their refuges' contribution to BIDEH at multiple landscape scales (policy 601 FW 3). Management, ranging from preservation to active manipulation of habitats and populations, is necessary to maintain BIDEH. We favor management that restores or mimics natural ecosystem processes or functions to achieve refuge purposes. Alternative C, objectives C1.1, C1.2, and C1.3, may have a larger focus on active management than this objective, but active management may still be implemented in this objective to maintain BIDEH in these habitats and promote native wildlife. BIDEH is defined by the Service in policy 601 FW 3, which can be viewed at <http://www.fws.gov/policy/601fw3.html>; accessed April 2013.

The refuge has never been officially open to the commercial harvest of fin fish, lobster, crab, whelk, aquaculture, or the removal of any shellfish other than by hand-harvest methods. Horseshoe crab harvesting had been previously allowed but was closed in 2002.

Within these habitats, priority species have been discussed in detail in the rationale sections of alternative A (objectives A1.3, A1.4, A1.6, A1.8, and A1.9) and alternative B (objectives B1.3, B1.4, B1.6, B1.10, B1.11, and B1.12). In alternative C, we would largely promote these species by providing healthy habitats relatively free from human disturbance. In some circumstances, species-specific strategies would still be implemented; those are listed below.

Strategies

Continue to:

- Allow nonnative rugosa rose to remain on the refuge in areas where wading birds nest.
- Participate in regional efforts to monitor the health and integrity of salt marsh habitat on the refuge. Focus management on reducing non-climate stressors to salt marshes.
- Patrol and enforce closed areas.
- Maintain and enforce closure of the refuge to horseshoe crab harvesting.
- Maintain and enforce closure of the refuge to mussel harvesting to preserve food sources for red knots and American oystercatchers.
- Evaluate aquaculture requests in open water-submerged bottom areas (below mean low water) within the Declaration of Taking boundary for compatibility and benefits to refuge resources on a case-by-case basis.
- Support partner efforts to investigate impacts of mercury on saltmarsh sparrows and natural processes that affect mercury speciation and bioavailability.
- Support partner efforts to investigate the hybridization of saltmarsh sparrows and how it impacts the population fitness of saltmarsh sparrows and Nelson's sparrows.
- Support partner efforts to study wintering sea ducks using the waters surrounding the refuge and monitor impacts of diseases effecting these populations.

- Support partner efforts to study shellfish and fin fish stocks, marine mammals including seals, and their principal predator, the great white shark.
- Support partner efforts to assess genetic diversity of eelgrass across the region and test it against an experimental factorial design of potential stress parameters.
- Support partner efforts of New England Aquarium and Mass Audubon to rescue stranded sea turtles and collect dead sea turtles recovered from refuge waters for scientific research.
- Facilitate and participate in research relevant to these habitat types and priority species when research has conservation implications and would inform future management.

Within 1 year of CCP implementation:

- Prohibit bottom substrate-disturbing fishing activities such as mussel harvesting, scallop dragging, or any hydraulic dredging for shellfish within the Declaration of Taking refuge boundary in order to protect eelgrass beds and maintain productive benthic communities for wildlife.
- Use temporary symbolic fencing to seasonally close portions of maritime shrublands with high densities of nesting wading birds and high seasonal public visitation from April to August and most salt marsh habitat on North Monomoy Island to minimize trampling of vegetation and invertebrates and disturbance to nesting saltmarsh sparrows and American oystercatchers from April to September.
- Install salt marsh elevation tables in refuge salt marshes to evaluate the effects of various factors on the salt marshes' ability to keep pace with sea level rise.
- Determine appropriateness of using beach renourishment or other habitat alteration techniques in non-wilderness areas to protect habitats from the effects of erosion and sea level rise (refer to alternative B, objective B1.1 rationale).
- Support partner efforts to study potential impacts of offshore wind or tidal energy development to resources of concern.
- Strengthen partnerships to manage lands adjacent to the refuge and throughout Cape Cod to enhance BIDEH and priority species across the landscape.

Within 5 years of CCP implementation:

- Control nonnative invasive plant species throughout maritime shrubland, salt marsh, and freshwater pond habitats using manual tools, herbicides, or prescribed fires to ensure less than 10 percent coverage refugewide.
- Work with partners to evaluate and map the current and historic extent of submerged aquatic vegetation, specifically eelgrass, within the Declaration of Taking to determine whether these species are stable, decreasing, or increasing and if active management of the resource is necessary.
- Determine presence and abundance of purple marsh crabs in all salt marshes on the refuge; if present, initiate studies to determine if herbivory is having an impact on salt marsh vegetation and health.

- Collect baseline data of flora and fauna in the subtidal areas of the refuge to help determine priority species and develop a management plan to ensure conservation of these species.

Monitoring Elements

- Conduct a complete census of all wading birds refugewide every 5 to 10 years using aerial survey method or ground counts, and in conjunction with Statewide efforts.
- Conduct annual census of American oystercatchers as identified in alternative A, objective A1.3.
- Conduct annual census of least terns as identified in alternative A, objective A1.4.
- Partner with NOAA to conduct pupping counts and aerial surveys of haulout sites to track use by seals refugewide.
- Monitor and report entangled and stranded marine mammals.
- Analyze saltmarsh sparrow survey data from previous years to determine population trends and inform future management and inventory needs.
- Record the number of mosquito samples monitored on Morris Island for West Nile Virus or other arboviruses that pose a potential human health risk.
- Collect salt marsh elevation information from salt marsh elevation tables and evaluate the need for remediation.
- In future years, monitor growth and expansion of the marsh through coastal shoreline monitoring protocols currently being developed; in the meantime, monitor growth and expansion through onscreen digitizing of aerial photos combined with ground-truthing.
- Monitor American oystercatcher productivity throughout the nesting season by searching nesting areas at least 2 times per week beginning in early April to document nest locations, laying, hatching, nest failure or success, and overall productivity.
- Map locations and record abundance of invasive/nonnative species; monitor changes in species composition, and evaluate effectiveness of control techniques implemented.
- Record the number of enforcement actions taken against illegal harvesters of horseshoe crabs in refuge waters.
- Record the number of aquaculture activities initiated within refuge waters.
- Monitor the impacts of dredging projects on subtidal areas within the refuge boundary; this may involve pre-and post-dredging monitoring of substrates, submerged aquatic vegetatios, or benthic communities.

- Monitor avian health of common eider and other sea ducks by conducting surveillance during fall and winter to detect field mortality events, documenting observations of sick or dying birds, and identifying, collecting, and submitting dead birds for analysis at the National Wildlife Health Center in collaboration with the Region 5 Migratory Birds Office.
- Update bathymetry data refugewide every 10 to 15 years.

REFUGE GOAL 2:

Provide the public with wildlife-dependent recreational, interpretive, and environmental educational opportunities to enhance awareness and appreciation of refuge resources and promote stewardship of the wildlife and habitats of Monomoy NWR.

Objective C2.1 (Access and Use)

With primary consideration to wildlife and wilderness character protection and public safety, allow public access to Morris Island, North Monomoy Island, South Monomoy, including Nauset/South Beach, and Minimoy Island while accommodating an anticipated minimum 25 percent visitation increase to the Monomoy NWR over the period. Ensure refuge visitors accessing the Monomoy Wilderness use non-motorized means, such as paddling or sailing.

Rationale

The majority of the land on Morris Island is privately owned, and access to refuge headquarters and the visitor contact station is provided via a right-of-way over private land as already summarized under alternative B.

The absence of both directional and informational signs can make Monomoy NWR difficult to locate. No signs off the highway or in Chatham direct or inform potential visitors about Monomoy NWR until just before the refuge entrance. A further complication is that the Morris Island parcel where the headquarters and visitor contact station is located lies beyond a gate identifying the roads of the Quitneset neighborhood as private. The lack of adequate signs deters and discourages visitors and causes confused visitors to accidentally drive through private neighborhoods while trying to find the refuge facilities. Upon reaching the headquarters, visitors often arrive to a full parking lot and either leave without visiting the refuge or are compelled to park along the east side of the Morris Island Road causeway. The causeway is narrow and cars parked on the side impede traffic flow and can be a safety issue for pedestrians.

The U.S. Department of Transportation Volpe National Transportation Systems Center study, "Alternative Transportation Study: Monomoy National Wildlife Refuge" (May 2010), evaluated 21 (of 39 identified) transportation interventions addressing a variety of transportation safety and access issues at Monomoy NWR. These interventions improve multi-modal access, reduce traffic and parking congestion, improve traveler safety, enhance the visitor experience to Monomoy NWR and within Chatham, and develop and enhance partnerships with governmental and nongovernmental agencies. Alternative C strategies initiate several interventions recommended by the Volpe Center offering potential long-term relief from conditions currently limiting visitor access, specifically, finding the route through Chatham to reach Monomoy NWR. Implementation of the transportation plan would also assist the refuge in pursuing carbon neutrality by the year 2020 as proposed by the Service in its Visions document.

In this alternative, a concession would operate from refuge headquarters, but shuttle visitors from an off-refuge parking site to Morris Island and ferry visitors to North Monomoy Island and South Monomoy. Concessionaires would conduct interpretative natural and cultural history tours, arrange for refuge-permitted fishing or waterfowl hunting guides, rent kayaks, and provide other visitor related services. Two parking spaces would be provided for the concessionaire

and shuttle vans. The concessionaire would be encouraged to manage guide services that facilitate hiking, paddling, or sailing, and encourage visitors to engage in non-motorized boating in order to promote a wilderness experience.

Currently there are no improved facilities for launching kayaks or small sailboats from the Morris Island portion of the refuge. The nearest undeveloped launch site is from the nearby Morris Island Road causeway. While there are several businesses that rent kayaks and paddle-boards in Chatham and surrounding communities, none are proximal to the refuge or the Monomoy Wilderness. Increasing the proportion of visitors accessing the Monomoy Wilderness via non-motorized transport decreases noise levels and noise disturbance of nesting, foraging, or resting migratory birds of conservation concern, while enhancing the opportunities for finding solitude within wilderness. Atmospheric carbon emissions from fossil-fuel consumption would also decrease.

An entrance fee would be collected under this alternative. Proceeds from the fee collection would be reinvested in the refuge to provide and maintain facilities for visitor use.

This alternative provides for compatible public use but is more conservation focused; it reduces potential disturbance to wildlife and its habitat to the maximum extent possible, while still allowing some public use of the refuge. The benefits to wildlife under this alternative are explained under goal 1.

As we proposed under alternative B, we would also close the refuge to dog walking within a year of the publication of this plan. We have found dog walking to disturb wildlife and other visitors and create unsanitary conditions; it is not considered one of the six priority uses on national wildlife refuges, and has not been found to be an appropriate use of the refuge.

Strategies

Continue to:

- Open all of North Monomoy Island to the public from October to March. During the April to September nesting season (map 2.8), an east-west trail corridor bisecting North Monomoy Island is open to the public as is the Broad Creek area to the south; in addition, the entire perimeter of North Monomoy Island below the mean high tide line is open for public circumnavigation around North Monomoy Island.
- Restrict travel on the refuge to foot traffic to maintain the wilderness character of North Monomoy Island and South Monomoy and protect sensitive nesting areas and wildlife habitat; this may include limiting access to dune areas to prevent erosion, as necessary.
- Maintain and enforce closure of the refuge to operation and landings of motorized personal watercraft (e.g., wave runners, jet skis) on the refuge land and in refuge waters.
- Maintain and enforce closure of the refuge to kiteboarding operation within the Declaration of Taking-Marine Protected Area boundary.
- Use the existing rights-of-way on Tisquantum Road, Wikis Way, and Stage Island Road to access refuge properties.
- Phase out non-Service parking and dinghy storage at Stage Island Lot 7b.

- Assist in enforcement of the Marine Mammal Protection Act through regular communication and coordination with staff from partner agencies and organizations, including the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, and International Fund for Animal Welfare.

Within 1 year of CCP implementation:

- Utilizing adaptive management, strive to keep Morris Island and large portions of South Monomoy Island (including Nauset/South Beach) open year-round, and re-open seasonally closed areas after chicks fledge or after staging seasons for migratory birds such as roseate and common terns, piping plovers, red knots, and American oystercatchers in order to provide additional wildlife viewing and photography opportunities; temporarily close portions of the refuge only when necessary to protect wildlife and their habitat based on seasonal use by priority species.
- Do not allow motorized boats to land along the Monomoy Wilderness shoreline, including the tidal flats and beaches; allow paddling (kayak, canoe, rowed boats, paddle-boards) and sailing to continue.
- Improve visibility of the right-of-way trail access to the western portion of Morris Island refuge property off of Tisquantum Road; improve signs so visitors can easily view the access point and understand they have the right to use the path to access the refuge.
- Expand the ban on pets, including dogs on leash, to the entire refuge, including Morris Island and the part of Nauset/South Beach that is now part of South Monomoy Island.
- Work to acquire an additional parking area adjacent to the Stage Island lot for refuge use only; terminate all parking privileges for non-Service staff purposes within 60 days of CCP completion.
- Include parking requirements in all special use permits issued to commercial guides, photographers, and others.

Within 5 years of CCP implementation:

- Develop an entrance fee system that includes a 1-day entrance fee that would be charged per car or per group if arriving via foot or bicycle.
- Use funds from the Service's recreational fee program to maintain and improve visitor facilities and/or the hiring of temporary staff to provide enhanced visitor services.
- Replace the current motorized seal tour-ferry access system from the refuge headquarters on Morris Island with a competitive, multi-year concession, or special use permit holders if no concessionaire is identified. All commercial wildlife watching tours, passenger ferry service, kayak or paddling tours, and hunting and fishing guides would, within 2 years of CCP approval, need a refuge permit to operate within the refuge Declaration of Taking boundary, regardless of whether vessels or passengers make a refuge landfall.
- Through local and regional partners, provide a local-area shuttle serving Morris Island refuge facilities and other destinations in Chatham from secure, satellite parking locations during the June 1 to September 15 peak visitor season.

- Expand the shuttle beyond simple passenger transport to include transport of kayaks and gear and bicycles, in addition to people.
- Work with municipal partners on the use of a town-owned or private parking facility that could serve as a satellite parking location for a shuttle service that would bring visitors to the refuge.
- Assist the Town of Chatham to move the fencing and improve the shoulder on the east side of the Morris Island Road causeway to better accommodate shuttle passage, parked cars, and emergency vehicles.
- Encourage the Town of Chatham to create a multi-use bicycle and pedestrian path on one side of the causeway, and provide assistance as possible to help the town implement this project.
- Provide bicycle and pedestrian facilities and amenities through local and regional partners at refuge headquarters, Chatham area shuttle stops, and other high-priority downtown locations.
- Through local and regional partners, improve motor vehicle, bicycle, and pedestrian route directional signs to refuge Morris Island facilities, including designated trails, satellite parking and shuttle stops, and the concessionaire's off-refuge facilities; this may involve the erection of new signs within Service rights-of-way on land owned by others.
- Through local and regional partners, add directional and informational signs throughout Chatham, along Route 6, and elsewhere on Cape Cod; improve traveler information on Service and refuge Web and social media sites, and sites managed by local and regional partners.
- Complete a visitor services 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.
- Encourage paddling as a means of transportation to the Monomoy Wilderness portions of the refuge, particularly North Monomoy Island, by collaborating with local and regional partners or the refuge concessionaire to provide kayaking launch facilities, rentals, instruction, and group outings to the Monomoy Wilderness.
- Explore the feasibility of improving a non-motorized watercraft launch site at the northern stairway and existing asphalt path or along the Morris Island causeway; examine possibilities for constructing a waterfront access way meeting Americans with Disabilities Act requirements at the headquarters site or across the Tisquantum Road right-of-way.
- Extend an Americans with Disabilities Act-compliant boardwalk segment from the existing Morris Island Trail boardwalk to the Nauset/South Beach-Outermost Harbor overlook trail stops.

Monitoring Elements

- Estimate the number of visitors at the refuge engaged in wildlife-dependent priority and other non-priority public use activities.

- Monitor available empty parking spaces and document traffic congestion at the Morris Island refuge administrative complex and nearby causeway throughout the year.
- Record number of special use permits.
- Conduct a daily patrol of the Morris Island parking lot for vehicles displaying valid parking passes and enforce parking fee requirements when violations are detected.
- Monitor and report daily parking fee collections and number of parking passes issued.
- Record the number of validated parking passes.

**Objective C2.2
(Interpretation)**

Within 5 years, refuge visitors would receive information regarding the Service, the Refuge System, the relationship of refuge habitats and management to endangered species recovery, biotic diversity, wilderness character and ethics, and natural coastal processes that shape the land itself and plant and animal communities. Interpretive opportunities would be offered primarily through virtual and self-guided means that would focus on key refuge messages such as migratory birds, listed species, and wilderness character.

Rationale

Under this alternative, interpretation would be primarily remote or virtual, and have increased emphasis on communicating the importance of preserving wilderness character and values such as naturalness and solitude. Issuing a wilderness access pass would carefully limit the number of visitors at one time to the Monomoy Wilderness. In limiting the number of visitors and providing a hands-off experience, visitors are more likely to focus on the wilderness characteristics of the refuge and encounter solitude, which would lead to an enhanced experience and understanding of the value of an enduring wilderness resource.

Interpretation is a priority public use identified in the Refuge Improvement Act and is one of the most effective ways we can raise our visibility, convey our mission, and identify the significant contribution the refuge makes to wildlife conservation and wilderness preservation. Public understanding of the Service and its activities in the Commonwealth of Massachusetts is currently very low. 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.

Many of the interpretive materials at the visitor contact station are 10 years old and need to be updated to current Service standards and refuge management operations. Guided tours would further increase opportunities for interpretation. Parking at the Morris Island visitor contact station is limited, and an alternative visitor contact facility located in Chatham would allow for increased interpretive opportunities. Access to most of the refuge is limited by boat. A concession system for non-motorized tours/outings would increase access and opportunities for interpretation. A safe, easily accessible and less congested visitor contact facility that provided adequate parking could serve as a location where shuttles run by partners or concessionaires bring visitors to the refuge. In order to maintain the integrity of wilderness, no kiosks would be constructed on North Monomoy Island or South Monomoy. Information will be available through the use of technology, such as podcasts and handheld devices such as PDAs.

Strategies*Continue to:*

- Welcome visitors to the visitor contact station on Morris Island and strive to have it open year-round, with reduced hours from October through April and open 7 days a week during summer months when the refuge hires interns.
- Inform the public about the refuge and Refuge System, its purpose and mission, and its resources using brochures, rack cards, interpretative panels on trails, and the refuge Web site.
- Update refuge literature and daily/seasonal information (e.g., flood warning, high tide info, etc.) in a timely manner as conditions and access change based on bird nesting and seal haulout occurrences.
- Provide refuge visitors with wilderness ethics and stewardship information and Monomoy Wilderness information through the visitor contact station, Web site, social media, printed materials, and community outreach activities.
- Maintain the interpretive panels along the Morris Island Trail.
- Develop temporary, portable exhibits designed to describe Monomoy's biotic diversity including wildlife, plants, fish, natural processes, wilderness character, and their management at Monomoy refuge.
- Provide an informational kiosk on Morris Island that contains signs and literature that orient visitors to the refuge and inform them of public use regulations.
- Issue press releases to inform the public about refuge activities and accomplishments.

Within 1 year of CCP implementation:

- Improve informational materials at Morris Island kiosk to highlight the importance of the Monomoy Wilderness and the importance of the refuge to threatened and endangered species as a migration stopover site.
- Issue permits for interpretive commercial water-based tours and interpretive commercial land-based natural history and cultural history tours until a concessionaire contract is awarded.
- Work with a concessionaire or professional guide services to provide natural history and wildlife day trip tours of the islands.
- Conduct seasonal interpretive programs at the refuge by refuge staff, interns, and volunteers, and provide roving interpreters on the Morris Island Trail; content will include wilderness area components.
- Increase public awareness of the Monomoy Wilderness through outreach and social media, including outreach to audiences who engage in water-dependent activities, e.g., anglers, divers, paddlers, etc.
- Provide comment boxes and an online form for refuge visitors to provide feedback about their refuge experience. Evaluate comments and respond appropriately to address issues affecting the quality of the visitor experience.

Within 5 years of CCP implementation:

- Complete a visitor services 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.
- Create and disseminate fact sheets about key refuge resources (e.g., endangered and threatened species, barrier island ecosystem, salt marsh habitat), refuge management (e.g., predator management, seasonal closures), Monomoy Wilderness, and watchable wildlife, such as seals.

Within 7 years of CCP implementation:

- Use virtual technology to conduct interpretation such as text tours, podcasts, and virtual geocaching and letterboxing.
- Explore the option of creating a smartphone application with Monomoy Wilderness coordinates and information about the wilderness designation.
- Develop podcasts and other materials designed to provide portable interpretation to refuge visitors about refuge resources such as species of concern, migratory birds, and the Monomoy Wilderness.
- Develop a self-guided interpretive kayak trail and brochure.
- Increase the focus on the role of natural processes in shaping refuge habitats in refuge informational products and delivery.
- Work with the Arthur Carhart Wilderness Center to develop and provide materials that inform the public about wilderness areas.

Within 10 years of CCP implementation:

- Develop seasonal paddling tours/routes using podcasts to describe refuge wildlife, habitats, and management actions.

Monitoring Elements

- Record the number of participants at onsite and offsite refuge programs and events.
- Record the number of visitors to the refuge Web site.
- Record the number of people that report use of geocaching trail and stamp letterbox.
- Record the number of visitors to the visitor contact station on a daily basis.
- Record the number of refuge brochures and rack cards ordered on an annual basis.
- Record the number of visitors who participate in concessionaire-led tours.
- Record the number of participants on tours guided by refuge staff and volunteers.

**Objective C2.3
(Environmental Education)**

Within 5 years of CCP approval, we would provide at least one curriculum-based onsite environmental education program for local and regional school districts to use that will focus on Monomoy NWR, Monomoy Wilderness, the Refuge System, National Wilderness Preservation System, species of conservation concern,

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and natural ecological processes. Students who participate in the refuge's environmental education program would be able to understand the importance of wildlife conservation, with a focus on migratory birds; understand the need for wilderness stewardship; identify the Monomoy's role in the National Wildlife Refuge and National Wilderness Preservation Systems in conserving Federal trust resources; explain the unique characteristics of the Monomoy Wilderness; and name at least one endangered species for which the refuge conducts management.

Rationale

As one of the six priority public uses, environmental education receives enhanced consideration in refuge planning. The Refuge System's guiding principles for environmental education programs are detailed at <http://www.fws.gov/policy/605fw6.html>. Environmental education programs can promote understanding and appreciation of natural and cultural resources and their conservation on all lands and waters in the Refuge System. Generally, conducting environmental education involves more than facilitating field trips. It requires the refuge to develop a course of study designed to meet national and state curriculum-based academic standards. We believe that educating people about the significance of the refuge for birds and other wildlife would foster an appreciation of conservation and encourage them to make environmentally responsible decisions.

Environmental education is a process designed to develop citizenry with the awareness, concern, knowledge, attitudes, skills, motivations, and commitment to work toward solving current environmental problems and preventing new ones. Environmental education is identified in the Refuge Improvement Act as a priority public use. Providing high-quality environmental education opportunities for the public on a refuge can promote stewardship of natural resources and develop an understanding of the refuge's purposes and the mission the Refuge System. It can also help raise awareness, understanding, and an appreciation of the role of the refuge along the Massachusetts coast and its contribution to migratory bird conservation and wilderness stewardship. Environmental education can garner support for other refuge programs. Investing in youth and providing unique opportunities in a structured learning environment are top priorities for the Service; the refuge staff would explore additional opportunities to support agency goals.

There are multiple efforts being made nationally and internationally to connect children with the outdoors and utilize natural resources as outdoor classrooms. In March 2010, President Obama issued “A Blueprint for Reform: The Reauthorization of the Elementary and Secondary Act” (also referred to as No Child Left Behind). This blueprint addresses the need for leadership, equality, and innovation in the school systems. The President has challenged the country “that by 2020, the United States will once again lead the world in college completion,” (U.S. Department of Education 2010). President Obama clearly states that this is not a job for teachers, parents, and principals alone but should be done collaboratively.

There are additional efforts that have been introduced, such as the Commonwealth of Massachusetts’ “No Child Left Inside” initiative, the Massachusetts Department of Conservation and Recreation’s “Great Park Pursuit,” and the Children and Nature Network, which provides free resources and tool kits, and encourages organizations to reconnect children to nature. National wildlife refuges are an ideal venue to provide students and teachers with a hands-on learning environment while achieving scholastic goals. As concerns about nature-deficit disorder and child obesity rise (Louv 2005), it appears to be imperative now more than ever for local organizations to facilitate and provide opportunities for children to explore and learn in the outdoors.

This objective focuses on creating a curriculum-based program with local schools, teachers and other educators to utilize available resources provided by organizations such as the Children and Nature Network and the Massachusetts Department of Conservation and Recreation. The refuge can provide to local teachers educational material that supports existing curricula on the importance of the Monomoy refuge and wilderness area for rare habitats, waterfowl, shorebirds, and seabirds, other wildlife, and plant communities.

The refuge currently does not have a curriculum-based environmental education program, but occasionally accommodates requests to host school groups.

Strategies

Continue to:

- Host school field trips as requested, as timing and resources allow.

Within 5 years of CCP implementation:

- Complete a visitor services 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 objectives, and evaluate visitor experiences; modify or restrict access, or adapt management strategies as warranted.
- Host one to two teacher workshops each year on threatened and endangered species, the value of Monomoy Wilderness, and other topics relevant to the refuge’s mission.
- Provide assistance for teacher workshops upon request and coordinate with area educators to survey existing programs and develop curricula and programs that would enhance or complement area environmental education programs, e.g., outer Cape region.
- Provide access to Children and Nature Network tool kits in English and Spanish.

Within 7 years of CCP implementation:

- Work with partners to conduct a pilot study to determine age-appropriate curriculum content, and strategize to target education efforts to age groups currently not being served by other education organizations.

Within 10 years of CCP implementation:

- In coordination with partners and based on the findings of the pilot study, create at least one curriculum-based environmental education program that can be utilized by local and regional school districts onsite or offsite that incorporates the Massachusetts curriculum frameworks as well as key refuge messages.

Monitoring Elements

- Record the number of students and teachers who participate in refuge environmental education programs and field trips.
- Maintain a listing of curriculum-based programs that refuge staff, interns, or volunteers develop with partners or on their own.
- Record the number of teacher workshops and the number of attendees at each one.
- Record the number of times schools check out tool kits.

Objective C2.4 (Wildlife Observation and Photography)

Over the next 15 years, increase the number of wildlife observation and photography visits by 50 percent in a manner consistent with preserving wilderness, “taking nothing but photographs and leaving behind nothing but footprints.”

Rationale

The refuge facilitates opportunities for wildlife observation and photography through self-guided nature trails and observation areas. We strive to provide safe, accessible wildlife observation and photography opportunities while protecting wildlife and their habitats at sensitive times in sensitive places on the refuge, and preserving wilderness character. Providing high-quality opportunities for visitors to engage in these activities on the refuge promotes visitor appreciation and support for refuge programs.

Wildlife observation and photography are identified in the Refuge Improvement Act as priority public uses. Priority public uses are to receive enhanced consideration when developing goals and objectives for refuges.

This alternative expands upon alternative A by enhancing visitor services (e.g., special use permits for filming, rental of pop-up blinds) to increase wildlife observation and photography opportunities. We would promote the use of refuge-permitted guides to facilitate enhanced and increased opportunities for the public to observe and photograph wildlife on the refuge. Monomoy NWR is known worldwide for its magnificent and dynamic landscape, and it offers the chance to participate in premiere bird watching. Those who visit North or South Monomoy experience something magical and unique at the refuge, and find a sense of true escape and solitude in the wilderness. The refuge staff receives multiple requests for commercial filming and photography each year. As production companies recognize the unique experience Monomoy refuge offers, their desire to capture that to share with the world places demands on refuge staff.

High-quality wildlife observation and photography can be defined as observation that occurs in a primitive setting and provides an opportunity to view wildlife and

its habitats in a natural setting; observation facilities that are safe and maximize opportunities to view the spectrum of species and habitats of the refuge; observation opportunities that promote public understanding of and increase public appreciation for America's natural resources; viewing opportunities that can inspire increased stewardship of our refuge resources; when provided, facilities that blend with the natural setting and provide viewing opportunities for all visitors, including persons with disabilities; observers who understand and follow procedures that encourage the highest standards of ethical behavior in natural and wilderness areas; viewing opportunities that exist for a broad variety of visitors; and observers who have minimal conflict with other priority wildlife-dependent recreational uses or refuge operations.

In 2009, the U.S. Fish and Wildlife Service reported that 48 million birdwatchers across America spent \$35 billion in 2006 pursuing one of the Nation's most popular outdoor activities. The report, *Birding in the United States: A Demographic and Economic Analysis*, is based on data collected during the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

In 2006, the Service published an additional report, compiled by Service economists, entitled *Banking on Nature 2006: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation*. According to the study, recreational use on national wildlife refuges generated almost \$1.7 billion in total economic activity during fiscal year 2006. The study found that nearly 35 million people visited national wildlife refuges in 2006, supporting almost 27,000 private sector jobs and producing about \$543 million in employment income. In addition, recreational spending on refuges generated nearly \$185.3 million in tax revenue at the local, county, State and Federal level. The economic benefit is almost four times the amount appropriated to the Refuge System in fiscal year 2006. About 87 percent of refuge visitors travel from outside the local area.

Strategies

Continue to:

- Allow wildlife observation, which includes nature study, year-round on refuge lands open to public use from ½ hour before sunrise to ½ after sunset; prohibit touching, feeding, or harassing wildlife.
- Maintain the two viewing platforms on Morris Island (map 1.2).
- Allow commercial filming and photography on the refuge only when there is a direct benefit to the refuge or the Service; once determined compatible by the refuge manager, all allowed commercial filming and photography would operate under a special use permit.
- Allow photography in any area of the refuge open to the public.
- Host a youth or adult photography contest.

Within 5 years of CCP implementation:

- Complete a visitor services 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 objectives, and evaluate visitor experiences; modify or restrict access, or adapt management strategies as warranted.
- Provide trails on refuge lands for wildlife observation; the wilderness trails would not be maintained by refuge staff, but would be clearly marked by satellite coordinates so visitors may use GPS-enabled devices to find the path, if necessary.

- Evaluate use of a critter cam(s) so the public can observe nesting behavior online, which would facilitate a connection to animals they may not be able to view in person.
- Develop guidelines for group visits into the Monomoy Wilderness and for local organizations that conduct photography trips on the refuge.
- Work with a concessionaire to develop photography tours with emphasis on the unique values and opportunities of the Monomoy Wilderness.

Within 7 years of CCP implementation:

- Evaluate and implement opportunities for universally accessible observation; enhance the existing boardwalk at the refuge headquarters to make it Americans with Disabilities Act-compliant for improved observation opportunities at the overlook on Morris Island Trail.

Monitoring Elements

- Record the number of visitors engaged in wildlife observation and photography annually.
- Record the number of special use permits issued for commercial photography and guided wildlife observation tours.
- Record the number of passengers and participants who utilize guides or the concessionaire in trips to the refuge.
- Record the number of views to the critter-cam Web site.

Objective C2.5 (Fishing)

Provide opportunities for fishing in a manner consistent with preserving and promoting wilderness character, and ensure that 75 percent of visitors engaged in recreational fishing report that they had a high-quality experience.

Rationale

The waters off Monomoy NWR have a deserved reputation as a world-class fishery. Novice anglers as well as experienced anglers visit Monomoy NWR every year. Many recreational anglers are accompanied by commercial guides. As this is a commercial activity, it must be regulated on the refuge by use of a special use permit. There are many benefits to anglers who are working with a commercial guide with the oversight of refuge staff. This oversight is only possible if all commercial guides obtain a special use permit issued by the refuge manager. The special use permit would identify refuge rules, regulations, and closed areas, highlight habitats and species of concern that should be avoided by anglers to reduce disturbance, and would explain wilderness so all activities conducted by anglers are consistent with the wilderness character of refuge lands and waters. Refuge staff would establish a fair and equitable system for commercial fishing guides to operate on the refuge. The refuge expects these guides would help increase fishing opportunities on the refuge with an added level of safety, reduce conflicts with refuge wildlife, protect refuge sensitive refuge habitats, and ensure greater protection and appreciation of wilderness character.

Most fishing visits are for surf fishing, but some visitors also engage in the harvest of lobsters, crab (not horseshoe crabs), and whelk. Where fin fishing, lobster, crab, and whelk pot harvesting, and hand-harvest of scallops occur in the open waters lying above the submerged lands within the Declaration of Taking, we will work with the National Marine Fisheries Service and the Massachusetts Division of Marine Fisheries to implement their regulations for these fisheries. These activities do not cause disturbance to the submerged lands.

We define a high-quality fishing program as one that maximizes safety for anglers, other visitors, and refuge staff; causes no adverse impacts on populations

of resident or migratory species, native species, threatened and endangered species, or habitat; encourages the highest standards of ethical behavior in regard to catching, attempting to catch, and releasing fish; is available to a broad spectrum of the public that visits, or potentially would visit, the refuge; provides reasonable accommodations for individuals with disabilities to participate in refuge fishing activities; reflects positively on the Refuge System; provides uncrowded conditions; creates minimal conflict with other priority, wildlife-dependent recreational uses or refuge operations; provides reasonable challenges and harvest opportunities; increases visitor understanding and appreciation for the fishery resource; and complements the wilderness characteristics of the refuge.

Strategies

Continue to:

- Allow fin fishing from all refuge lands otherwise open to public use, from ½ hour before sunrise to ½ hour after sunset, in accordance with Massachusetts and Federal regulations which includes possessing a saltwater or freshwater fishing license recognized by the Commonwealth of Massachusetts.
- Allow fishing in the open waters, above submerged lands, under State and Federal regulations. Included fishing activities are: demersal long line fishing; mid-water trawl fishing, hook and line/rod and reel fishing; lobster, crab, and whelk pot fishing; and, hand-harvest of scallops.
- Allow anglers to fish on Morris Island 24 hours per day in accordance with all Federal and State fishing regulations.
- Allow freshwater fishing in the ponds on South Monomoy during daylight hours.

Within 1 year of CCP implementation:

- Provide seasonal information (e.g., conditions, species, fish runs) on the refuge's Web site and at the Morris Island kiosk, and distribute to local fishing organizations, guides, and shops; this would include closed areas maps and any additional refuge-specific regulations.

Within 3 years of CCP implementation:

- Replace the current motorized seal tour-ferry access system from the refuge headquarters on Morris Island with a competitive, multi-year concession, or special use permit holders if no concessionaire is identified; the concession would arrange for refuge-permitted fishing or waterfowl hunting guides and provide a system to bring anglers and their guides to the refuge, along with providing other visitor-related services.
- Provide recreational anglers and their commercial guides with permits to operate, using non-motorized transport, in the waters within the Declaration of Taking through the refuge concessionaire agreement (as authorized sub-permittees) or special use permit.
- Establish a station at headquarters for recycling monofilament and safely disposing of fish line.

Within 5 years of CCP implementation:

- Complete a visitor services 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.

- Work with partners and coordinate with the State to develop a fishing brochure that informs anglers about refuge resources and seasonal closures and would be available on the refuge’s Web site and at Morris Island kiosk.

Within 10 years of CCP implementation:

- Evaluate the fishing program; modify or restrict access, or adapt management strategies as warranted

Monitoring Elements

- Report the estimated number of fin fishing visits to refuge.
- Record the number of special use permits for commercial guides awarded annually.
- Record harvest data and information that is voluntarily reported to the refuge.
- Record the number of fishing guides distributed.
- Record the number of offsite locations receiving information materials.
- Record the amount of monofilament collected from the recycling station.
- Have refuge law enforcement officers ensure that anglers possess the proper license requirements.

Objective C2.6 (Shellfishing)

Allow refuge visitors to harvest subterranean shellfish (softshell clams, quahogs, and razor clams) using non-mechanized hand raking tools only and no chemical means of extraction (such as salt and chlorine), in accordance with Town of Chatham Rules and Regulations or additional refuge regulations.

Rationale

Same as alternative B, objective B2.6.

Strategies

Continue to:

- Allow the harvest of subterranean shellfish using non-mechanized, hand methods on intertidal habitats year-round, following State and Town regulations.

Within 1 year of CCP implementation:

- Coordinate with the Mass Division of Marine Fisheries and the Town of Chatham Shellfish Warden to review annual use, obtain harvest records, and promote and ensure the sustainability of the shellfish resource on the refuge.
- Start to enforce the existing prohibition on the use of wheeled carts and other forms of mechanical transport in Monomoy Wilderness.
- Require the use of only non-mechanized, hand-operated harvesting equipment; prohibit all motorized and chemical means for extracting shellfish from the sediment.
- Prohibit bottom substrate-disturbing fishing activities such as mussel harvesting, scallop dragging, or any hydraulic dredging for shellfish within the Declaration of Taking refuge boundary.
- Coordinate with the Town of Chatham Shellfish Warden to ensure all permitted shellfishers using Monomoy refuge acknowledge being provided with information about the refuge purpose and mission, regulations, seasonal closures, and wilderness ethics and stewardship.

Within 3 years of CCP implementation:

- Update the refuge fishing plan and regulations to allow the hand harvest of subterranean shellfish using methods that preserve wilderness character. Do not allow extractive methods such as salt or chlorine.

Monitoring Elements

- Record the number of annual resident and non-resident shellfish harvest permits issued by the Town of Chatham Shellfish Warden.
- Monitor harvest numbers as an indicator of potential threats to softshell clam and quahog resource sustainability by tracking harvest pressure (numbers and take) to determine if it meets refuge compatibility.
- Formulate additional guidelines or regulations, if needed, that further protect species and habitats of concern and sensitive areas, preserve wilderness character, and conduct public guidance/review.
- Monitor impacts to wildlife, particularly staging shorebirds such as red knots and nesting shorebirds such as American oystercatchers.

Objective C2.7 (Waterfowl Hunting)

Officially open up to 40 percent of the refuge within the Declaration of Taking to waterfowl hunting in accordance with Federal law and Massachusetts regulations.

Rationale

Providing compatible wildlife-dependent recreation and educational activities on units of the Refuge System is a Service priority. The National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. § 668dd et seq.) provides authority for the Service to manage the refuge and its wildlife populations. In addition it declares that compatible wildlife-dependent public uses are legitimate and appropriate uses of the refuge System that are to receive priority consideration in planning and management. There are six wildlife-dependent public uses: hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. The Improvement Act directs managers to increase recreational opportunities, including hunting, on national wildlife refuges when compatible with the purposes for which the refuge was established and the mission of the Refuge System. Increasing hunting opportunities on portions of the area administered by the refuge would allow management of waterfowl populations at acceptable levels, provide more wildlife-dependent recreational opportunities for the public, and promote a better understanding and appreciation of refuge habitats and their associated fish and wildlife resources. Implementation of the proposed actions would be consistent and compatible with the Refuge Recreation Act, Refuge Administration Act, and the Monomoy NWR Comprehensive Conservation Plan.

Hunting at Monomoy refuge and the surrounding area is recognized by the Service as a traditional form of wildlife-related outdoor recreation. We anticipate a low degree of hunting pressure to occur as a result of officially opening the refuge for these activities. The open water area known as the Declaration of Taking that surrounds the Monomoy refuge has been long recognized for its high-quality waterfowl hunting opportunities. The Service has not regulated this use under past or current management practices.

The refuge weighs a number of factors in opening an area to hunting or fishing, including safety considerations. The refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting activity, recommend that the refuge be closed to hunting, or further liberalize hunting regulations within the limits of State and Federal regulations. Restrictions would occur if hunting becomes inconsistent with other higher priority refuge programs or endangers refuge resources or public safety.

Patrols by refuge law enforcement officers would accomplish enforcement of Federal and State hunting regulations. Massachusetts Environmental Police Officers may also conduct enforcement patrols. The frequency of patrols would be determined by hunter use, the level of compliance observed during patrols, and information obtained from participants, visitors, and other sources. Refuge brochures and hunter orientation prior to the hunting seasons would emphasize refuge-specific regulations, safety considerations, and the protection of wildlife species found on the refuge.

Strategies

Within 3 years of CCP implementation:

- Develop a hunt opening package, conduct NEPA analysis and public review, and develop a hunt plan; develop monitoring strategies to measure change, measure achievement of objective, and evaluate the hunt program; modify or restrict access, or adapt management strategies as warranted.
- Open a portion of Monomoy NWR to waterfowl hunting in accordance with Federal, State, and local hunting regulations. There will be no fee for individual permits but there will be a minimal processing fee charged by the third-party vendor that issues the hunt permits.
- Require all commercial guides providing guiding services within North Monomoy Island and South Monomoy, including wilderness and non-wilderness areas, to apply for and receive a special use permit to conduct guiding on the refuge (50 CFR 27.97); the fee for this special use permit would not be less than \$100 or more than \$500 with all monies, minus administration costs, to enhance the hunting program and the hunters' experience.
- Prohibit motorized boat landing in wilderness and the use of decoys on the shoreline to maintain and enhance the wilderness experience.

Monitoring Elements

- Record the number of special use permits issued.
- Record the number of each species harvested.
- Record the number of individual waterfowl permits issued.

REFUGE GOAL 3:

Communicate and collaborate with local communities, Federal and State agencies, and conservation organizations to promote natural resource conservation and support the goals of the refuge and the mission of the U.S. Fish and Wildlife Service.

Objective C3.1 (Public Outreach)

Over the next 10 years, expand public information dissemination efforts with a target of annually reaching 100,000 people, and participate in at least three offsite opportunities annually within the local community or the Cape Cod region, so residents and visitors can learn about the Monomoy NWR coastal barrier ecosystem, the Monomoy Wilderness, and the role of the Refuge System in protecting and managing those enduring resources.

Rationale

The Service is America's voice for wildlife, speaking for the wild creatures that cannot speak for themselves. To be effective, we must do so in a way that provokes public understanding and support (USFWS National Outreach Strategy). Outreach is two-way communication between the Service and the public to establish mutual understanding, promote involvement, and influence attitudes and actions, with the goal of improving joint stewardship of our natural resources. Communication is essential to the refuge resource mission. Good communication builds understanding, and helps the public find opportunities to be outdoors, make informed decisions about the future of fish and wildlife resources, and, hopefully, support the actions of the refuge. A Presidential

initiative known as America's Great Outdoors (www.americasgreatoutdoors.gov; accessed August 2012) strives to help people connect, or reconnect, with the outdoors through jobs and service, recreation, and education. Effective communication strategies will help us connect people not only to the refuge and its wilderness but also to other nearby conservation areas and organizations.

This objective focuses on achieving such positive awareness for the refuge through better communication. Although the refuge must manage many controversial issues, it also enjoys significant strengths, including dedicated staff and volunteers, and strong public interest in fish and wildlife. To meet the refuge challenges and take advantage of its strengths, the strategies under this objective recommend a more unified and strategic communications program that will help the refuge carry out its resource conservation mission. Our approach is to make the most effective use of staff time and resources by focusing our messages into something people can easily understand, and making sure that message is delivered to concerned people in a timely manner. Local businesses that cater to users of Monomoy NWR are important potential constituents who can help promote responsible, nature-based tourism, provide guidance on the area's sensitive natural resources, and encourage responsible behavior around sensitive wildlife habitats and populations. We would promote the refuge and provide information at partner locations, such as the Chamber of Commerce, public library, Marconi Maritime Museum, Salt Pond Visitor Center at Cape Cod National Seashore, Cape Cod Museum of Natural History, Nickerson State Park, Massachusetts Audubon Society's Wellfleet Bay and Long Pasture Sanctuaries, U.S. Coast Guard Heritage Museum, Provincetown Center for Coastal Studies, Woods Hole Oceanographic Institution, Waquoit Bay National Estuarine Research Reserve, New England Aquarium, and other applicable locations.

Strategies

Continue to:

- Update and print brochures and rack cards and make them available to the Chamber of Commerce and tourist attractions.
- Use Internet resources to inform the public about the refuge, its mission, and management actions.
- Issue press releases to inform the public about refuge activities, respond to media inquiries, and publish our accomplishments online.
- Give presentations about refuge management actions and wildlife at venues such as the Cape Cod Natural History Conference.
- Occasionally participate in local festivals and parades.
- Work with the Friends group and volunteers to increase refuge activities and funding opportunities.

Within 1 year of CCP implementation:

- Speak about the refuge and its purpose to local service and civic organizations and conservation partners regionwide, upon invitation only.
- Promote an outreach campaign (already initiated by the National Marine Fisheries Service, National Oceanic and Atmospheric Administration, International Wildlife Coalition, and Cape Cod Stranding Network) to provide information to all visitors about the importance of abiding by the Marine Mammal Protection Act and minimizing disturbance to marine mammals; the outreach message would focus on a recommended viewing distance of at least 150 feet to allow marine mammals undisturbed resting and foraging areas critical to survival.

Within 5 years of CCP implementation:

- Develop and distribute rack cards and refuge brochures throughout Chatham and neighboring towns to increase awareness of the refuge, its importance to federally listed threatened and endangered species, opportunities for refuge visitors, and the Monomoy Wilderness.
- Provide and maintain refuge informational displays at other frequently visited refuge partner locations.

Within 7 years of CCP implementation:

- Deliver refuge information through select video clips or live-streaming, real-time wireless wildlife camera images.
- Develop tools to conduct outreach on refuge issues and updates via modern technology such as text messages, virtual tours, podcasts, and smartphone applications.

Monitoring Elements

- Record the number of press contacts and press releases made annually.
- Record the number of attendees and participants at onsite and offsite presentations and community events.
- Record the number of people visiting and receiving information through social media venues (e.g., Facebook “Likes”).
- Record the number of brochures and rack cards printed each year.
- Record the number of visits to refuge Web site.

Objective C3.2 (Community Support)

Over the life of the plan, for the aim of having the public understand our purpose and management activities, develop new and enhance existing partnerships, support the Friends group and volunteers, and provide other forms of support to improve refuge communications and effectiveness and improve our ability to achieve the refuge mission by increasing volunteer hours and the number of partnerships by 50 percent.

Rationale

A primary purpose of these partnerships would be to collaborate on promoting and educating about what it means to visit a wilderness area, and the important role it plays in preserving the quality of life on the Cape Cod region. Refuge Friends groups play a vital role in supporting the mission of the refuge, providing volunteers and community support. Until fairly recently, the Friends of Monomoy were an important part of the refuge by providing some financial support for interpretation and habitat management projects on the refuge. In 2011, the Friends of Monomoy reorganized and reestablished itself, and is growing membership and revenue sources to help further the refuge purpose and Service mission.

In 2011, people conducting wildlife management, habitat management, public use, or maintenance activities contributed nearly 5,300 volunteer hours. This is a tremendous asset to a station that only has three permanent staff. Additional volunteer support would be necessary.

Community partnerships can also provide support for refuge programs and activities. Without the dynamic partnerships and relationships within the local community and beyond, the refuge staff would not be able to provide the level of outreach and education that we hope to achieve. The refuge is a public resource,

therefore, community involvement can help create a sense of ownership and deepen individuals' connection to it.

Strategies

Continue to:

- Recruit, train, and guide volunteer efforts on the refuge.
- Maintain a productive relationship with the Friends of Monomoy group that understands the refuge mission and actively supports refuge activities.
- Implement current Friends and volunteer policies according to Draft Friends Policy 633 FW 1-4 and National Wildlife Refuge System Volunteer and Partnership Enhancement Act of 1998 October 5.
- Maintain a volunteer database.
- Encourage the establishing a local chapter of the American Lighthouse Foundation to support future maintenance and conduct interpretation at the historic Monomoy Point Light Station.

Within 2 years of CCP implementation:

- Develop and implement volunteer position descriptions to increase volunteer opportunities.
- Work with partners to promote and educate what it means to visit a wilderness area and the important role it plays in preserving the quality of life in the Cape Cod region.

Monitoring Elements

- Record the number of volunteers and volunteer hours contributed annually.
- Track number of members of the Friends group.
- Record the number of partnerships with Monomoy NWR.
- Record the number of volunteer position descriptions created.
- Record the number of events and number of participants at each event.

REFUGE GOAL 4:

Objective C4.1 (Wilderness Implementation and Designation)

Ensure the spirit and character of the Monomoy Wilderness are preserved.

Manage the Monomoy Wilderness to enhance its wilderness character and values, in a manner consistent with refuge establishment purposes (migratory birds and endangered species recovery) and the Refuge System mission.

Rationale

Wilderness is a congressionally designated land use. As defined by the Wilderness Act, wilderness is untrammeled (free from human control), undeveloped, and natural, and offers outstanding opportunities for solitude and primitive recreation. The National Wildlife Refuge System manages refuge wilderness to secure an enduring resource of wilderness and to accomplish refuge purposes in a way that preserves wilderness character. The Service is responsible for ensuring that the Monomoy Wilderness retains its primeval character and influence, without permanent improvements or permanent human habitation, and its natural conditions are preserved. Visitors to the Monomoy Wilderness would experience an area affected primarily by the forces of nature where the imprint of humans in their immediate surroundings is substantially

unnoticeable; find outstanding examples of ecological, geologic, scientific, educational, scenic, or historic features; and can seek and experience solitude or primitive and unconfined recreation.

Systematic actions over time to reduce, avoid, or mitigate the adverse effects on the structures and associated archaeological resources from natural weathering, erosion, and decay will be implemented following National Historic Preservation Act sections 106 and 110 and 36 CFR Part 800. We would analyze all activities associated with light station structure mitigation measures, and determine through use of the minimum requirements decision guide process how to safely and practically conduct those periodic historic mitigation operations using traditional skills and, when necessary, the minimum tool.

As mentioned under Conducting Resource Management and Public Use Activities Consistent with Wilderness Principles, we will complete minimum requirements analyses as needed during the plan period for refuge administrative and management activities conducted within wilderness essential to fulfilling the purposes of the refuge. Each management activity would be evaluated via the minimum requirements decision guide process, which is a process to identify, analyze, and select management actions that are the minimum necessary for wilderness administration. The minimum requirements decision guide process provides the foundation for the more comprehensive wilderness stewardship plan.

Strategies

Continue to:

- Manage the Monomoy Wilderness for naturalness, wildness, and outstanding opportunities for solitude or primitive and unconfined recreation by managing refuge operations and visitor uses in a manner that protects wilderness character.
- Continue managing the Inward Point and Powder Hole non-wilderness areas to maintain or enhance their size, naturalness, and opportunities for solitude or primitive and unconfined recreation throughout the 15-year plan period, to the extent that it will not prevent fulfilling refuge establishment purposes or the Refuge System mission (610 FW).
- Use the appropriate response to unplanned wildfire ignitions that provides for public and firefighter safety, while recognizing periodic fire as a natural process with long-term benefits to an enduring wilderness resource.
- Implement management activities that involve temporary rather than permanent uses or site occupancy, that create no new surface disturbance, do not involve placement of permanent structures or installations (e.g., temporary symbolic fencing), or use motorized equipment or mechanized transport, unless it is the minimum tool possible.
- Provide refuge staff with wilderness stewardship training appropriate for their positions.
- Review all refuge management activities proposed within the Monomoy Wilderness and the Inward Point and Powder Hole inventory areas, and ensure they are consistent with wilderness management using the minimum requirements analysis process presented under Actions Common to All Alternatives.

- Assess current wilderness character (untrammled; undeveloped; natural; outstanding opportunities for solitude or primitive and unconfined recreation; and other features/unique attributes) within the Monomoy Wilderness and implement the wilderness monitoring component of a wilderness stewardship plan for the Monomoy Wilderness.

Within 1 year of CCP implementation:

- Decrease the use of boats to transport refuge staff to North Monomoy Island and South Monomoy by requiring staff and volunteers to paddle or hike to their work locations when feasible.
- Remove all signs within the Monomoy Wilderness and utilize the kiosk on Morris Island to inform visitors about the Monomoy Wilderness, e.g., allowed uses, boundary, etc.

Within 3 years of CCP implementation:

- Complete a wilderness stewardship plan for the Monomoy Wilderness 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; limit or restrict access through use of a wilderness access pass, or adapt management strategies as warranted.
- Explore opportunities with the Arthur Carhart Center to recruit a wilderness ranger and develop programs that promote Wilderness Act principles, such as wilderness education workshops for local/regional educators.
- Explore the feasibility of a wilderness access pass and implement, if practicable, the minimum access pass program; use as a means of educating and informing the public about the wilderness-designated lands and waters on the refuge, refuge wildlife and management actions, and appropriate use by visitors while in refuge wilderness; limit the number of people allowed at one time in an effort to maintain the solitude character of the Monomoy Wilderness.
- Explore the option of creating a smartphone application with Monomoy Wilderness coordinates and information about the wilderness designation.
- Work with regional airports and the Federal Aeronautic Administration to increase pilot awareness of the 2,000-foot flight ceiling restriction over the Monomoy wilderness.

Monitoring Elements

- Maintain a listing of completed minimum requirements analyses for the refuge, and documentation of the annual minimum requirements analysis review process.
- Record the number of refuge wilderness access passes issued and other special use permits.
- Record compliance with wilderness access pass requirements and number of warnings and notices of violation issued.
- Record the number of staff receiving wilderness orientation and number of training records for all refuge staff, volunteers, and interns.
- Record the number of educators completing wilderness education teacher workshops.

REFUGE GOAL 5:**Protect cultural resources that exist on the refuge.****Objective C5.1
(Archaeological Resources
and Historical Structures)**

Identify, evaluate, and preserve all significant cultural resources and historic properties on the refuge. To the extent that it is prudent and feasible within the context of projected sea level rise and climate change, protect and preserve Native American and historical archaeological resources on Monomoy NWR threatened by coastal erosion. Protect and preserve significant archaeological resources threatened by proposed ground-disturbing activities or sea level rise damage, or subject to potential artifact looting.

Manage the Monomoy Point Light Station (listed on the National Register of Historic Places) to meet the historic preservation standards of the Secretary of the Department of the Interior to the extent that is prudent and feasible, given the long-term threat to the structures posed by erosion and climate change.

Rationale

The Service has a legal responsibility, under section 106 of the National Historic Preservation Act, to consider the effects its actions may have on cultural resources and enforce all Federal cultural resource protection laws and regulations on refuge lands. Considering the topography of the area and its proximity to intertidal areas and estuaries, additional archaeological sites may be found in the future. Some archaeological sites probably were located in areas that have been inundated by rising seas following the last ice age, or have vanished due to the dynamic nature of coastal barrier islands. The remains of historic shipwrecks may also be revealed in the intertidal or subtidal zones. Protections extend not only to those cultural resources on refuge lands, but also to resources on land affected by refuge activities.

The Service is obligated to preserve the Monomoy Point Light Station to the extent feasible, but long-term in-situ preservation of the structures at the site would no longer be a priority under alternative C. We would conduct basic maintenance on the structures to keep the light station intact for as long as possible. However, the natural processes of erosion and decay would, over time, result in the destruction of the light station structures at the site. Prior to that eventuality, a program would be implemented to provide for mitigation of these foreseeable adverse effects on the National Historic Register sites and National Register-eligible structures and associated archaeological resources following National Historic Preservation Act sections 106 and 110 and 36 CFR Part 800 collaborative procedures. This could include the relocation of light station structures that may require periodic mechanized or motorized transport and equipment use and access to the worksites along a temporary overland trail or road through the Monomoy Wilderness. The mitigation program would be developed in consultation with the State Historic Preservation Officer and in accordance with the cultural resource provisions of the National Historic Preservation Act and the Wilderness Act. For example, additional analysis and documentation of historic architecture could be completed, and more comprehensive archaeological investigations could be performed. An interpretive display at a mainland location could be based upon historic documents, photographs, maps, and artifacts from the site.

Strategies

Continue to:

- Comply with the National Historic Preservation Act section 106 prior to conducting any ground disturbing activities on the refuge; compliance may entail any combination of State Historic Preservation Officer consultation, literature survey, or field survey.

- Enforce all Federal cultural resource protection laws and regulations including the necessary provisions of Archaeological Resources Protection Act to protect cultural resources on the refuge.
- Develop and implement throughout the plan period a historic site management plan for the Monomoy Point Light Station structures and associated archaeological structures, following National Historic Preservation Act sections 106 and 110 and 36 CFR Part 800 collaborative procedures; the plan would provide for systematic mitigation over time of the adverse effects from natural weathering, erosion, and decay processes.

Within 1 year of CCP implementation:

- Develop a memorandum of agreement collaboratively with the State Historic Preservation Officer and Advisory Council on Historic Preservation that identifies the steps the Service will take to systematically reduce, avoid, or mitigate the adverse effects from natural weathering, erosion, and decay processes on the Monomoy Point Light Station structures and associated archaeological structures.
- Identify, evaluate, or survey cultural resources on the refuge on a project-specific basis.

Within 5 years of CCP implementation:

- Establish a protocol with the Massachusetts Board of Underwater Archaeological Resources for examination and assessment of historic shipwreck remains that may appear.

Within 10 years of CCP implementation:

- Develop a mitigation plan for the Monomoy Point Light Station to implement an interpretive program of exhibits, documentary research, archaeological investigation, and possible relocation of structures, prior to the destruction of this National Register site by natural forces.

Monitoring Elements

- Maintain a log of all National Historic Preservation Act section 106 compliance actions and archaeological surveys performed prior to proposed ground-disturbing activities.
- Enforce Federal cultural resource protection laws and regulations by patrolling refuge lands for violations, and investigating any violations that are detected in accordance with the Archaeological Resources Protection Act.
- Monitor erosion damage to recorded sites and report any newly revealed sites, including historic vessel remains.

REFUGE GOAL 6:

Develop and maintain a diverse and inclusive workplace with sufficient resources, including infrastructure and equipment, to work productively toward fulfilling the refuge mission.

Objective C6.1 (Staffing)

Over the next 15 years, fill six additional permanent full-time positions to implement the activities outlined in alternative C (see appendix G for proposed staffing chart under alternative C). Provide a diverse and inclusive workplace through annual training, support, and awareness.

Rationale

The refuge must still carry out its affirmative responsibilities to protect refuge resources and preserve wilderness character. This requires an increase in staff, as the work of the refuge cannot be done with just three permanent employees.

We base the addition of six new staff members on the 2008 national staffing model for the National Wildlife Refuge System, which indicated that Monomoy refuge, due to its location, size, number of visitors, and complexity of its biological program, should have a permanent staff of nine full-time employees. The composition of these positions varies from alternative B in that the concentration of the work will be different. Additionally, due to increased travel time refuge staff will spend paddling and hiking to assigned field work locations under alternative C, a substantially larger seasonal workforce is needed than under alternatives A and B.

In 2011, the Service released a Diversity and Inclusion Implementation Plan. It sets four strategic goals as follows:

- (1) Highlight diversity as a core value.
- (2) Establish partnerships, sources, and feeder systems.
- (3) Recruit and hire a diverse and highly skilled workforce.
- (4) Maintain a highly skilled diverse workforce through talent management.

We recognize that a workforce is more innovative, resourceful, and productive when it includes a diversity of skills, perspectives, ideas, and backgrounds. Diversity is a permanent commitment of the Service and resources, including time, money and people, will be committed to creating and maintaining a diverse and inclusive workplace. An inclusive workplace is one where all employees feel they are part of a team with open communication, they are treated with respect and fairness, and they can develop to their full potential.

Strategies

Continue to:

- Recruit and employ seasonal and term biological, visitor services, and wilderness staff, interns, and volunteers.
- Work with organizations such as the Student Conservation Association and the Federal Pathways program to hire talented young college students for seasonal intern positions.
- Provide a safe work environment that promotes diversity and inclusion.
- Seek grants and funding partnerships to support additional staff.
- Request additional staffing as funding becomes available.
- Provide relevant staff training opportunities to increase work skills and understanding of diversity and inclusion.

Within 15 years of CCP implementation:

- Fill one Visitor Services Specialist position.
- Fill one Maintenance Worker/Boat Operator position.
- Fill one Administrative Assistant position.
- Fill two Park Ranger-Law Enforcement positions.
- Fill one Refuge Operations Specialist position.

Monitoring Elements

- Record the number of temporary, term, and permanent staff.
- Record the number of volunteer hours.

Objective C6.2 (Facilities and Maintenance)

Over the life of the plan, provide adequate, safe, and energy-efficient infrastructure and equipment to safely support refuge staff, interns, and volunteers, while sharing a headquarters site with National Weather Service facilities.

Rationale

Adequate, properly functioning facilities are needed to support staff, volunteers, the visiting public, and the co-located National Weather Service upper air sounding operations. Current space is barely able to accommodate alternative A staffing plus co-location of visitor contact station and staff offices during the peak (April-October) field and visitation seasons. This peak season also coincides with very high seasonal rental rates. The Cape Cod and Islands region has very high housing costs, and affordable seasonal rental rates in the outer Cape are in very short supply. Refuge-provided housing will remain essential for recruiting the best qualified

candidates by offsetting housing costs. Relocating the majority of refuge functions currently based at Morris Island to an alternate waterfront site with more useable space in the local community in new and expanded facilities specifically designed and constructed to support all refuge functions would help alleviate the overcrowding that would occur with increased staff and the site limitations of this small, built-out parcel. Considering the increased focus on providing more virtual opportunities for visitors to experience the refuge and Monomoy Wilderness, we would explore opportunities to



Morris Island trail

USFWS

partner with others to purchase or construct offsite a new visitor contact station, administrative offices, and residential housing facilities. We would continue to use the lighthouse keeper's house at the Monomoy Point Light Station as a summer camp for staff and volunteers and equipment storage from April to September, but only basic maintenance will be done to maintain the structures. Long-term preservation would not occur under this alternative.

The National Weather Service, an agency within the Department of Commerce's National Oceanic and Atmospheric Administration, has been co-located with the refuge at the Morris Island administrative complex since 1971; this joint

tenancy is expected to continue at least through the plan period. A memorandum of understanding guides the dual-use of the Morris Island facilities. The current refuge headquarters/visitor contact station building was first constructed and occupied as an administrative office for the Environmental Science Services Administration, forerunner to the National Weather Service. Weather Service personnel launch radiosonde-equipped weather balloons at least twice daily, recording upper atmospheric conditions that are entered into computer forecast models from which daily weather forecast products are derived. Any facility/infrastructure modifications at the Morris Island site could impact these Weather Service operations.

The refuge administrative and National Weather Service facilities on Morris Island stand atop an east-facing, eroding coastal bluff. While current erosion rates along this bluff are lessened by the barrier against direct ocean wave action provided by Nauset/South Beach, the forecasted geomorphological changes in the Nauset-Monomoy barrier complex caused by sea level rise suggest a return over the longer term to the active and rapid erosion rates of the past along this bluff. As recently as the mid-1950s, the historic Chatham Life Saving Station building used as residential quarters and a signal tower stood near the bluff edge with no outer barrier beach, exposed to the full impact of ocean waves. This structure was demolished in 1959, and portions of the foundation and tile drainpipe now rest at mid-slope and at the base, exposed by subsequent erosion of the bluff. Expected sea level rise and the resulting geomorphological changes (Giese et al. 2010) project over several decades a progressive westward migration of what is now Nauset/South Beach across Outermost Harbor and reconnecting to Morris Island. When the westward protective barrier beach migration is complete, the Morris Island bluff would once again be exposed to undiminished coastal storm wave energy and very rapid rates of erosion.

The National Weather Service's white-domed upper air sounding building and the current refuge public restroom building (and associated sewage disposal field) stand closest to the edge of the bluff, and would be the first threatened by further bank erosion. This Morris Island property is effectively built out, with little room for facility expansion except vertically. The site presently is operating near or at safe capacity for people and vehicles annually from June to August. Any further reduction in useable space on this small lot without a corresponding reduction in use will create unsafe conditions for visitors and staff, operational inefficiencies, and eventually entirely preclude some critical refuge operations at this site. The potential impact of further erosion of the Morris Island bluff is not a crisis demanding immediate action. However, this planning period is an opportunity for the refuge and National Weather Service to explore options deliberately. Formulating and initiating a thoughtful plan of action to relocate some or all of our water-dependent operations and shoreline access points for refuge visitors to another waterfront site in Chatham and surrounding vicinity will avoid a crisis when the options are fewer and solutions costlier.

Strategies

Continue to:

- Maintain the headquarters and visitor contact station, dormitory and maintenance buildings, and Monomoy Point Light Station to provide a safe working and living environment for refuge staff and volunteers.
- Work with the National Weather Service and maintain an memorandum of understanding with them for use of Service-owned land on Morris Island. Should the National Weather Service at any point decide to relocate their existing operation, the refuge would look into re-utilizing the current National Weather Service buildings and space and site use at the Morris Island site.

- Maintain a fleet of three highway vehicles and three outboard motor boats that provide safe and efficient transport to North Monomoy Island, South Monomoy, Minimoy Island, and offsite locations for resource management and administrative work; replace boats and motors as necessary to maintain a functional fleet.

Within 5 years of CCP implementation:

- Conduct a cost-benefit analysis to evaluate the cost of maintaining or renovating existing structures on Morris Island to meet the refuge's future needs, the cost of relocating all facilities to a preferred site, and the option of armoring and its possible impacts, to determine the most cost-efficient option the refuge could implement.
- Increase the number of motor vehicles or boats to accommodate staff increases in this alternative, as needed.
- Explore additional refuge staff housing opportunities within the local commuting area.
- Explore opportunities to acquire the waterfront Stage Island lot adjoining our current Lot 7b; add storage capability and expand parking for refuge staff.
- Explore opportunities to partner with the Town of Chatham or U.S. Coast Guard to establish new docks, covered boat storage, and maintenance with secure marine equipment storage and additional parking.

Within 10 years of CCP implementation:

- Explore the acquisition of an alternative headquarters site, which would include parking and shuttle to Morris Island, where the entire refuge operation can be relocated, including the visitor contact station; this would include exploring possibilities to co-locate with partners.

Objective C6.3 (Energy Efficiency)

Move the refuge toward carbon neutrality consistent with the Service's 2010 Strategic Plan for Responding to Accelerating Climate Change, by using practices to avoid or minimize greenhouse gas emissions and offset remaining emissions, to meet the Service goal of carbon neutrality by 2020. Refuge facilities would demonstrate renewable "green" energy measures similar to those a residential homeowner, farmer, or small business owner might install, and achieve a Gold LEEDS rating.

Rationale

The strategies that follow are part of a comprehensive effort to incorporate energy conservation technologies into the design of new and remodeled facilities on national wildlife refuges in the Northeast Region of the Fish and Wildlife Service, while simultaneously stimulating economic recovery. Guiding principles and other general information on implementing sustainable practices within the Refuge System can be found in Policy 565 FW 1.

The installation of wind turbines or photovoltaic arrays at the refuge aims to increase the proportion of electricity consumption derived from clean, renewable sources, while reducing the proportion derived from fossil fuel combustion and the associated greenhouse gas emissions, in effort to create a smaller carbon footprint. Wind turbines or photovoltaic arrays at the refuge headquarters would utilize the available wind and sunlight to generate electrical power at those facilities while reducing power consumption from the utility grid.

A solar-thermal domestic hot water system was added to the shop/dorm building in 2011, and additional thermal insulation was added to the headquarters attic. As new or replacement vehicles and boat motors are purchased, converting to more fuel efficient technologies such as gas-electric hybrids or flex (bio) fuel capable models would reduce fossil fuel consumption and associated atmospheric carbon emissions. Driving or using motorboat less and walking, bicycling, or paddling more while accomplishing the refuge purposes will also reduce fossil fuel consumption.

Public water treatment technology needed to ensure public health currently requires high per gallon energy input, and that energy is largely derived from fossil fuel consumption. Not all current refuge water uses (washing/rinsing refuge vehicles, boats, and other equipment) require potable water. Collecting and redistributing rainwater can replace a significant proportion of the refuge's current potable (metered) water consumption and associated fossil fuel consumption without risking human health.

The solar panels, wind turbine generators, and other energy conservation technologies proposed would provide public demonstrations of methods for reducing dependence on nonrenewable energy sources. Established public visitation at the headquarters site affords a unique opportunity to demonstrate small-scale wind-solar energy systems typical of a residential or small business application while reducing the facility carbon footprint (greenhouse gas emissions) that contribute to global climate change.

Strategies

Continue to:

- Conduct bird and bat surveys at the site of the proposed wind turbine for Morris Island to determine what species are currently using the area.
- Train staff and volunteers in water and energy conservation, purchase materials made with post-consumer content or with built-in solar panels for charging cell phones and other electrical devices in the field, and recycle and reuse materials.
- Maintain recycling and compost bins at refuge facilities.
- Work with local and regional partners seeking funding for alternative transportation measures that reduce fossil fuel consumption and associated carbon emissions by refuge visitors, such as local passenger shuttles with satellite parking, improved highway signs, and improved facilities for pedestrians, bicyclists, and kayakers.

Within 5 years of CCP implementation:

- Reduce metered/potable water consumption by installing rainwater collection and distribution systems at refuge administrative facilities. Transition the fleet to use hybrid and electric alternative fuel vehicles and boat motors when feasible to meet the needs of managing the refuge.
- Prepare a stand-alone NEPA analysis for the installation of a wind turbine to augment the solar thermal tube domestic hot water system installed in 2011 for the refuge headquarters complex on Morris Island.
- If project approved, seek funding to install the wind turbine.

Within 10 years of CCP implementation:

- Assuming approval and funding, install the wind turbine.

Monitoring Elements

- Calculate the amount of electricity generated on-site through solar and wind production and as a ratio of electricity usage purchased from the commercial grid.
- Calculate the annual fossil fuel consumption (heat, vehicles, boats and small engine equipment) for refuge operations.
- Calculate the annual metered (potable) water use.
- Estimate the total annual atmospheric carbon footprint for all refuge facilities and operations.
- Submit an annual Environmental Management system management review report that calculates green actions taken during the year and the amount of waste that is recycled.

Table 3.2 below compares and contrasts what distinguishes the three management alternatives evaluated in detail in this draft CCP/EIS. It provides highlights of the management actions that are presented in detail in chapter 3. We recommend readers consult chapter 3, including the sections titled “Actions Common to All Alternatives” and “Actions Common to Alternatives B and C” to understand the full range of what is proposed, and our rationale, under each alternative.

Table 3.2. Summary Comparison of Management Actions by Alternative.

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats and diversity of native wildlife and plant communities, including species of conservation concern.</p>	<p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>		
<p>Dune Grasslands (Roseate and Common Terns)</p>	<p>Objective A1.1: Continue to protect from disturbance and degradation 30 acres of nesting habitat for common terns and enhance and maintain 2 acres of prime nesting habitat for roseate terns within this area. Maintain a minimum productivity of 1.0 chick per nesting pair over a 5-year period for both species of terns.</p> <p><i>Continue to:</i></p> <ul style="list-style-type: none"> Use temporary symbolic fencing (see glossary) to seasonally close tern nesting areas from May through August to minimize human disturbance; if no nesting activity occurs within the closed area, posts may be removed beginning July 1 Patrol and enforce closed areas during the nesting season Establish and staff a temporary field camp from early May until mid-August to maintain human presence 24 hours per day for the purpose of providing predator management and to facilitate data collection Erect temporary, hard-sided blinds to facilitate the identification of possible limiting factors including diet composition and impacts of kleptoparasitism, and to further facilitate nesting studies and predator management Install temporary wooden chick shelters prior to nesting to increase chicks' ability to escape inclement weather and predators, and thus increase survival Install temporary wooden nesting structures, decoys (minimum of 100, as per Kress and Hall 2004), and sound systems to attract nesting roseate terns during the start of the nesting season Throughout the 125-acre gull management area (Areas A and B), minimize nesting of great black-backed and herring gulls through non-lethal harassment and destroy all nests by scattering nesting materials and removing eggs 	<p>Objective B1.1: Protect from disturbance and degradation 75 acres of nesting habitat for common terns and enhance and maintain 10 acres of prime nesting habitat for roseate terns within this area. Maintain a minimum productivity of 1.0 chick per nesting pair over a 5-year period for both species of terns.</p> <p><i>In addition to objective A1.1:</i></p> <ul style="list-style-type: none"> Evaluate potential for establishing new tern habitat and attracting birds to areas of the refuge not currently used, including further installation of sound systems and decoys Strengthen partnerships to manage lands adjacent to the refuge to create a larger area of continuous protection for terns <i>Within 5 years of CCP implementation:</i> Control nonnative invasive plant species throughout dune grasslands using manual tools, herbicides, or prescribed fires to ensure less than 10 percent coverage refuge-wide, with a control emphasis in tern nesting areas Determine appropriateness of using beach renourishment or other habitat alteration techniques in non-wilderness areas to protect habitats from the effects of erosion and sea level rise 	<p>Objective C1.1: Protect from disturbance and degradation 10 acres of nesting habitat for common terns and enhance and maintain 2 acres of prime nesting habitat for roseate terns. Maintain a minimum productivity of 1.0 chick per nesting pair over a 5-year period for both species of terns.</p> <p><i>In addition to objective A1.1, strategies 1, 2, 8, and 10 to 12: Upon CCP implementation:</i></p> <ul style="list-style-type: none"> Maintain periodic human presence through visits to the colony and surrounding areas generally 3 times per week from mid-May to early August Use temporary portable blinds (similar to photo blinds) that are easily moved throughout the nesting areas to facilitate the collection of nesting data and predator management Install temporary wooden chick shelters for roseate terns prior to nesting to increase chicks' ability to escape inclement weather and predators, and thus increase survival In areas within the common and roseate tern nesting area, or within 100 m of the nesting areas, destroy all nest attempts by great black-backed and herring gulls by scattering nesting materials and removing eggs In selected areas within the 10-acre nesting area, manipulate vegetation using mechanical methods, herbicide, and rotational prescribed burning to improve nesting habitat for terns and discourage nesting by competitor species, including laughing gulls

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p> <p>Dune Grasslands (Roseate and Common Terns) (cont.)</p>	<p>Minimize impacts of avian and mammalian predators to nesting terns through non-lethal and lethal management as described in appendix J</p> <p>In selected areas, manipulate vegetation using mechanical methods, herbicide, and rotational prescribed burning to improve habitat for terns and discourage nesting by competitor species, including laughing gulls</p> <p>Coordinate with avian disease specialists at the National Wildlife Health Center in Madison, WI, to document, detect, and minimize the spread of avian diseases</p> <p>Review 5-year reviews and recovery plan updates for roseate terns within 6 months of completion to make appropriate changes in management to accommodate updated recovery criteria, research needs, etc.</p> <p>Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and will inform future management</p>		

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Beach Shoreline and Dune Edges (Piping Plover)</p>	<p>Objective A1.2: Continue to protect from disturbance and degradation all high-quality nesting habitat and nearby foraging habitat for piping plovers on the refuge. Maintain a minimum productivity of at least 1.24 chicks fledged per pair annually and an average of 1.5 chicks fledged per pair over a 5-year period.</p> <p><i>Continue to:</i></p> <p>Use temporary symbolic fencing to seasonally close all suitable piping plover habitat that is located in areas that are vulnerable to human disturbance regardless of the presence of pairs by April 1; this may happen earlier if weather allows</p> <p>Use temporary symbolic fencing to seasonally close additional areas that contain breeding piping plovers (May) as nesting or courtship behaviors are observed; maintain these areas as closed until at least July 1 if no nesting has occurred or until all chicks have fledged (fencing would be removed as staff time allows once these criteria are met)</p> <p>Patrol and enforce closed areas during the nesting season</p> <p>Use temporary predator enclosures on piping plover nests that are located in sparsely vegetated areas with nothing obstructing the view of the bird or inhibiting the bird's ability to detect predators</p> <p>Minimize impacts of avian and mammalian predators to nesting plovers through non-lethal and lethal management as described in appendix J</p>	<p>Objective B1.2: Protect from disturbance and degradation all high-quality nesting habitat and nearby foraging habitat for piping plovers on the refuge, with a goal of increasing the nesting population over a 5-year period. Maintain a minimum productivity of at least 1.24 chicks fledged per pair annually and a mean productivity of at least 1.5 chicks fledged per pair over a 5-year period.</p> <p><i>In addition to objective A1.2, strategies 3 to 6, 8, and 9:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Use temporary symbolic fencing to seasonally close all suitable piping plover habitat regardless of the presence of pairs early in the season (March or April) and to seasonally close additional areas that contain breeding piping plovers (May through July) as nesting or courtship behaviors are observed; maintain these areas as closed until July 1 if no nesting has occurred or until chicks have fledged within the closed areas (fencing would be removed as staff time allows once these criteria are met)</p> <p>Participate in partner-based, high priority, landscape-level piping plover research, which may include resighting banded adults, collecting unhatched eggs for DNA analysis, or evaluating habitat availability as a limiting factor</p> <p>Use temporary solar-powered electric fence in suitable nesting habitat to protect piping plover nests from mammalian predators</p>	<p>Objective C1.2: Continue to protect from disturbance and degradation all high-quality nesting habitat and nearby foraging habitat for piping plovers on the refuge. Maintain a minimum productivity of at least 1.24 chicks fledged per pair annually and an average of 1.5 chicks fledged per pair over a 5-year period.</p> <p><i>In addition to objective A1.2, strategies 3 to 6, 8, and 9:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Use temporary symbolic fencing to seasonally close all suitable piping plover habitat regardless of the presence of pairs early in the season (March or April) and seasonally close additional areas that contain breeding piping plovers (May through July) as nesting or courtship behaviors are observed; maintain these areas as closed until July 1 if no nesting has occurred or until chicks have fledged or within the closed areas (fencing would be removed as staff time allows once these criteria are met)</p> <p>Participate in partner-based, high priority, landscape-level piping plover research, which may include resighting banded adults, collecting unhatched eggs for DNA analysis, or evaluating habitat availability as a limiting factor</p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p> <p>Beach Shoreline and Dune Edges (Piping Plover) (cont.)</p>	<p>Strengthen partnerships to manage lands adjacent to the refuge to ensure the success and survival of piping plovers in the surrounding area and to create a larger area of continuous protection</p> <p>Participate in partner-based, high priority, landscape-level piping plover research, which may include resighting banded adults or collecting unhatched eggs for DNA analysis</p> <p>Review 5-year reviews and recovery plan updates for piping plovers within 6 months of completion to make appropriate changes in management to accommodate updated recovery criteria, research needs, etc.</p> <p>Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and will inform future management</p>	<p>Experiment with the use of temporary non-electrified fencing to reduce mammalian depredation</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Determine appropriateness of using beach renourishment or other habitat alteration techniques in non-wilderness areas to protect habitats from the effects of erosion and sea level rise</p>	

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Beach Shoreline, Dune Edges, and High Salt Marsh (American Oystercatcher)</p>	<p>Objective A1.3: Continue to protect from disturbance and degradation all high-quality nesting habitat and nearby foraging habitat for nesting pairs of American oystercatchers. Maintain a mean productivity of at least 0.40 chicks fledged per nesting pair consistent with current research.</p> <p><i>Continue to:</i></p> <p>Use temporary symbolic fencing to seasonally close all suitable American oystercatcher habitat that is located in areas vulnerable to human disturbance regardless of the presence of pairs early in the season (April); this may happen earlier if weather allows</p> <p>Use temporary symbolic fencing to seasonally close additional areas that contain breeding American oystercatchers (May) as nesting or courtship behaviors are observed. Maintain these areas as closed until August 1 (if the areas remain unused), or until all chicks have fledged</p> <p>Patrol and enforce closed areas during the nesting season</p> <p>Participate in landscape-level color-banding effort through the American Oystercatcher Working Group to improve productivity estimates on the refuge, and contribute to a range-wide understanding of survival, movement, and dispersal, which are critical to understanding and predicting population trends at multiple spatial scales</p>	<p>Objective B1.3: Protect from disturbance and degradation all high-quality nesting habitat and nearby foraging habitat for approximately 30 to 40 nesting pairs of American oystercatchers per season. Maintain a mean productivity of at least 0.60 chicks fledged per nesting pair consistent with current research.</p> <p><i>In addition to objective A1.3, strategies 3 and 5 to 10:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Use temporary symbolic fencing to seasonally close all suitable American oystercatcher habitat regardless of the presence of pairs early in the season (March or April); maintain these areas as closed until August 1 (if the areas remain unused), or until all chicks have fledged</p> <p>Increase refuge participation in landscape-level color-banding efforts through the American Oystercatcher Working Group to improve productivity estimates on the refuge, and contribute to a range-wide understanding of survival, movement, and dispersal, which are critical to understanding and predicting population trends at multiple spatial scales</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Evaluate appropriateness of artificially incubating eggs to increase hatching success of American oystercatchers and minimize loss to predators</p>	<p>Not specifically addressed under alternative C</p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Beach Shoreline, Dune Edges, and High Salt Marsh (American Oystercatcher) (cont.)</p>	<p>Use temporary solar-powered electric fence in suitable nesting habitat to protect American oystercatchers from mammalian predators</p> <p>Experiment with the use of temporary non-electrified fencing to reduce mammalian depredation</p> <p>Explore the effectiveness of temporary nesting platforms for American oystercatchers to reduce nest loss due to overwash</p> <p>Minimize impacts of avian and mammalian predators to nesting American oystercatchers through non-lethal and lethal management as described in appendix J</p> <p>Strengthen partnerships with Mass Audubon's Coastal Waterbird Program and the Town of Chatham to manage lands adjacent to the refuge to ensure the success and survival of American oystercatchers in the surrounding area and to create a larger area of continuous protection</p> <p>Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and will inform future management</p>		

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Beach Shoreline and Dune Edges (Least Tern)</p>	<p>Objective A1.4: Continue to protect nesting least terns from disturbance.</p> <p><i>Continue to:</i></p> <p>Patrol and enforce closed areas during the nesting season</p> <p>Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and will inform future management</p>	<p>Objective B1.4: Protect nesting least terns and habitat to provide opportunities for an increased number of nesting pairs on the refuge. Maintain an average productivity of 1.0 tern chicks per nesting pair when the refuge supports 10 percent of the State's population.</p> <p><i>In addition to objective A1.4:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Use temporary symbolic fencing to close all suitable least tern nesting habitat in May, and additional areas as nesting behaviors are observed; maintain these areas as closed until August (when chicks have fledged), or until they are no longer being used by breeding birds</p> <p>Use lethal predator management to protect nesting least terns if the population reaches or exceeds 10 percent of the State population</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Use temporary solar-powered electric fence in suitable nesting habitat to protect least terns from mammalian predators</p> <p>Use temporary chick shelters to provide chicks with shade and protection from avian and mammalian predators; chick shelter design would be modified from other successful designs to address the most common predators on Monomoy refuge</p>	<p>Not specifically addressed under alternative C</p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Beach (Northeastern Beach Tiger Beetle)</p>	<p>Objective A1.5: Continue to protect from disturbance and degradation areas currently occupied by northeastern beach tiger beetle adults or larvae with sufficient protected habitat for expansion and genetic interchange (to be determined by future research). Maintain a peak count of at least 500 adults.</p> <p><i>Continue to:</i></p> <ul style="list-style-type: none"> Maintain vehicle closures on refuge lands to protect habitat and allow for continued population growth. Cooperate with the Town of Chatham, Commonwealth of Massachusetts, U.S. Coast Guard, and other partners involved in emergency and public safety operations to protect tiger beetles and habitat when vehicle access is deemed essential to protect human life. This includes increased monitoring when vehicles are present to minimize habitat degradation and mortality by OSVs. Regularly inform and communicate with officials and the public about areas occupied by tiger beetles on the refuge, including Nauset/South Beach, to foster continued support for protection and monitoring of tiger beetles currently using these areas and allow for continued expansion of spatial distribution Review 5-year reviews and recovery plan updates for northeastern beach tiger beetles within 6 months of completion to make appropriate changes in management to accommodate updated recovery criteria, research needs, etc. Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and will inform future management 	<p>Objective B1.5: Continue to protect areas currently occupied by northeastern beach tiger beetle adults or larvae from disturbance and degradation with sufficient protected habitat for expansion and genetic interchange (to be determined by future research). Continue to maintain a peak count of at least 500 adults. Enhance recovery opportunities and meet recovery objectives by serving as a donor site/source population for other sites in the Northeast.</p> <p><i>In addition to objective A1.5:</i></p> <p><i>Within 5 years of CCP implementation:</i></p> <ul style="list-style-type: none"> Facilitate and expand research opportunities on the refuge to fill data gaps that will promote tiger beetle recovery including, but not limited to, genetic work to determine differences between beetle populations in Massachusetts and Chesapeake Bay Work with the New England Ecological Services Field Office staff to determine other potential areas for translocation on the refuge or other viable sites in New England or New Jersey for population augmentation or introduction Work with the New England Ecological Services Field Office to utilize Monomoy refuge as a donor population for newly identified sites, while ensuring that the Monomoy population is not impacted 	<p>Objective C1.3: Continue to protect from disturbance and degradation areas currently occupied by northeastern beach tiger beetle adults or larvae with sufficient protected habitat for expansion and genetic interchange (to be determined by future research). Maintain a peak count of at least 500 adults.</p> <p><i>Same as objective A1.5.</i></p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Maritime Shrubland (Black-crowned Night-heron, Snowy Egrets, and Neotropical Migrant Songbirds)</p>	<p>Objective A1.6: Continue to minimize human disturbance to shrubland habitat generally consisting of northern bayberry and rugosa rose approximately 3 feet tall, which is used by nesting wading birds including black-crowned night-herons and snowy egrets.</p> <p><i>Continue to:</i></p> <p>Allow nonnative rugosa rose to remain on the refuge in areas where wading birds nest</p> <p>Use temporary symbolic fencing to seasonally close nesting areas in portions of the refuge with high seasonal public visitation to provide disturbance-free nesting opportunities for wading birds</p> <p>Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and will inform future management</p>	<p>Objective B1.6: Protect existing native maritime shrubland and evaluate use by migrating landbirds of conservation concern. If large patches of maritime shrubland are regionally important, maintain native species composition (including bayberry, beach plum, etc.) with less than 5 percent invasive plants. Continue to minimize human disturbance to shrubland habitat generally consisting of northern bayberry and the nonnative rugosa rose approximately 3 feet tall, which is used by nesting wading birds, including black-crowned night-herons and snowy egrets.</p> <p><i>In addition to objective A1.6:</i></p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Implement standard buffer distances for seasonal closures based on findings at other sites, and modify to be more restrictive at Monomoy refuge if buffers are not sufficient</p> <p>Evaluate regional importance of maritime shrubland on Monomoy refuge to migrating landbirds, and, if appropriate, periodically evaluate habitat conditions (including species composition, nonnative plant presence, and community structure)</p> <p>Utilize biological, mechanical, chemical, and fire management to reduce nonnative species in maritime shrublands deemed important for migrating landbirds</p>	<p>Not specifically addressed under alternative C; see habitat discussion under Objective C1.5</p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Intertidal (Migrating Birds, Horseshoe Crabs, and Marine Mammals)</p>	<p>Objective A1.7: Passively oversee up to 2,500 acres of intertidal habitat refuge-wide to benefit migrating and staging birds, particularly species of conservation concern, including black-bellied plover, piping plover, American oystercatcher, ruddy turnstone, red knot, sanderling, semipalmated sandpiper, dunlin, short-billed dowitcher, roseate tern, and common tern. Continue to prohibit harvest of horseshoe crabs and minimize human disturbance to gray and harbor seals that also rely on these intertidal areas</p> <p><i>Continue to:</i></p> <p>Use temporary symbolic fencing to maintain seasonal closures in portions of intertidal mudflats (that are generally established for nesting species) to reduce disturbance to staging and migrating birds</p> <p>Work with partners to determine the relative importance of tern staging sites on Cape Cod, identify problematic disturbances, and develop solutions to minimize disturbances</p> <p>Work with partners to document the importance of Monomoy refuge to migrating red knots and contribute to research that will inform species' recovery</p> <p>Maintain and enforce closure of the refuge to horseshoe crab harvesting</p> <p>Work with partners to study movement and embayment site fidelity of horseshoe crabs by tagging 500 crabs annually</p> <p>Participate in State and regional efforts to document changes in populations of horseshoe crabs by conducting spawning surveys on Morris Island, North Monomoy Island, and South Monomoy</p>	<p>Objective B1.7: Adaptively manage the refuge's approximately 2,500 acres of intertidal habitat to protect staging and migrating birds, particularly species of conservation concern, including black-bellied plover, piping plover, American oystercatcher, ruddy turnstone, red knot, sanderling, semipalmated sandpiper, dunlin, short-billed dowitcher, roseate tern, and common tern, so at least 90 percent of habitat being used annually by species of conservation concern is not subjected to frequent disturbances. Also manage this intertidal habitat to benefit juvenile and spawning horseshoe crabs and allow no harvest of horseshoe crabs within the refuge boundary.</p> <p><i>In addition to objective A1.7, strategies 2 to 6 and 8 to 10:</i></p> <p><i>Within 1 year of CCP completion:</i></p> <p>Continue to use temporary symbolic fencing to implement seasonal closures to public use to protect wildlife. There may be a small expansion to these closed areas which may occur along the western salt marsh edge of North Monomoy Island, around the barrier beach and salt marsh edge of Minimoy Island, and around the north end of South Monomoy. Habitat will be assessed on Nauset/South Beach.</p> <p>Use the Atlantic Flyway Shorebird Conservation Business Strategy as a guiding document for establishing priority research and conservation efforts.</p>	<p>Objective C1.4: Passively oversee 2,500 acres of intertidal habitat refuge-wide to benefit migrating and staging birds, particularly species of conservation concern such as black-bellied plover, piping plover, American oystercatcher, ruddy turnstone, red knot, sanderling, semipalmated sandpiper, dunlin, short-billed dowitcher, roseate tern, and common tern. Continue to prohibit harvest of horseshoe crabs and minimize human disturbance to gray and harbor seals that also rely on these intertidal areas.</p> <p><i>In addition to objective A1.7:</i></p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Initiate an outreach campaign to provide information to all visitors about the importance of minimizing disturbance to migrating and staging birds; the outreach message would focus on a recommended viewing distance of at least 50 m to allow birds to remain undisturbed in their resting and foraging areas which are critical to successful migration</p> <p>Annually identify areas (refuge-wide) that consistently support foraging or staging red knots or roseate terns, and seasonally close areas subject to high levels of disturbance to all human use</p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Intertidal (Migrating and Staging Birds, Horseshoe Crabs, and Marine Mammals) (cont.)</p>	<p>Work with the Cape Cod Stranding Network to assist with rescues of stranded and entangled marine mammals, and help monitor injured or sick marine mammals</p> <p>Maintain and enforce closure of the refuge to mussel harvesting to preserve food source for red knots and American oystercatchers</p> <p>Review 5-year reviews and recovery plan updates for roseate terns or other listed species present in this habitat type within 6 months of completion to make appropriate changes in management to accommodate updated recovery criteria, research needs, etc.</p> <p>Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and will inform future management</p>	<p><i>Within 5 years of CCP completion:</i></p> <p>Initiate an outreach campaign to provide information to all visitors about the importance of minimizing disturbance to migrating and staging birds; the outreach message would focus on a recommended viewing distance of at least 50 m to allow birds to remain undisturbed in their resting and foraging areas which are critical to successful migration</p> <p>Annually identify areas (refugewide) that consistently support foraging or staging shorebirds or terns and close areas that are subject to high levels of disturbance to all human use; a rapid-assessment method of identifying areas would be developed and implemented</p> <p>Periodically monitor human disturbance levels in an effort to ensure that at least 90 percent of habitat being used by species of conservation concern is not subjected to frequent disturbance</p>	<p>Not specifically addressed under alternative C; see habitat discussion under Objective C1.5</p>
<p>Beach Berm, Intertidal, and Nearshore Marine Waters (Marine Mammals)</p>	<p>See objective A1.7</p>	<p>Objective B1.8: Protect and support healthy seal populations on the refuge and ensure compliance with Marine Mammal Protection Act seal guidelines.</p> <p><i>In addition to objective A1.7, strategies 7 and 10:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Encourage, support and actively participate in partner efforts to study marine mammals including gray and harbor seals</p> <p>Evaluate use of symbolic fencing for seal haulout sites and pupping sites that are subject to frequent human disturbance</p>	

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<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p>	<p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>	<p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>	<p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>
<p>Maritime Shrubland, Salt Marsh, Freshwater Ponds, and Nearshore Marine Waters (Biological Integrity, Diversity, and Environmental Health)</p>	<p>Under alternative A, biological integrity, diversity, and environmental health for these habitats are addressed under other habitat and species objectives under goal 1</p>	<p>Under alternative B, biological integrity, diversity, and environmental health for these habitats are addressed under other habitat and species objectives under goal 1</p>	<p>Objective C1.5: Promote biological integrity, diversity, and environmental health (BIDEH) to ensure that the historical, regional, and conservation roles of the refuge are preserved. This objective is broad in intent and may emerge in a variety of ways based on the specific history and role of Monomoy NWR.</p> <p><i>Continue to:</i></p> <ul style="list-style-type: none"> Allow nonnative <i>rugosa rose</i> to remain on the refuge in areas where wading birds nest Participate in regional efforts to monitor the health and integrity of salt marsh habitat on the refuge. Focus management on reducing non-climate stressors to salt marshes Patrol and enforce closed areas Maintain and enforce closure of the refuge to horseshoe crab harvesting Maintain and enforce closure of the refuge to mussel harvesting to preserve food source for red knots and American oystercatchers Evaluate aquaculture requests in open water-submerged bottom areas (below MLW) within the Declaration of Taking boundary for compatibility and benefits to refuge resources on a case-by-case basis Support partner efforts to investigate impacts of mercury on saltmarsh sparrows and natural processes that affect mercury speciation and bioavailability Support partner efforts to investigate the hybridization of saltmarsh sparrows and how it impacts the population fitness of saltmarsh sparrows and Nelson's sparrows Support partner efforts to study wintering sea ducks using the waters surrounding the refuge and monitor impacts of diseases affecting these populations

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<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p>	<p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>		
<p>Maritime Shrubland, Salt Marsh, Freshwater Ponds, and Nearshore Marine Waters (Biological Integrity, Diversity, and Environmental Health) (cont.)</p>			<p>Support partner efforts to study shellfish and fin fish stocks, marine mammals including seals and their principal predator, the great white shark</p> <p>Support partner efforts to assess genetic diversity of eelgrass across the region and test it against an experimental factorial design of potential stress parameters</p> <p>Support partner efforts (New England Aquarium and Mass Audubon) to rescue stranded sea turtles and to collect dead sea turtles recovered from refuge waters for scientific research</p> <p>Facilitate and participate in research relevant to these habitat types and priority species when research has conservation implications and will inform future management</p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Prohibit bottom substrate-disturbing fishing activities such as mussel harvesting, scallop dragging, or any hydraulic dredging for shellfish within the Declaration of Taking refuge boundary in order to protect eelgrass beds and maintain productive benthic communities for wildlife.</p> <p>Use temporary symbolic fencing to seasonally close: (1) portions of maritime shrublands with high densities of nesting wading birds and high seasonal public visitation from April to August; (2) most salt marsh habitat on North Monomoy Island to minimize trampling of vegetation and invertebrates and disturbance to nesting saltmarsh sparrows and American oystercatchers from April to September</p>

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<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p>	<p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>		
<p>Maritime Shrubland, Salt Marsh, Freshwater Ponds, and Nearshore Marine Waters (Biological Integrity, Diversity, and Environmental Health) (cont.)</p>			<p>Install sediment elevation tables (SET) in refuge salt marshes to evaluate the effects of various factors on salt marshes' ability to keep pace with sea level rise</p> <p>Determine appropriateness of using beach renourishment or other habitat alteration techniques in non-wilderness areas to protect habitats from the effects of erosion and sea level rise (refer to alternative B, objective B1.1 rationale)</p> <p>Support partner efforts to study potential impacts of offshore wind or tidal energy development to resources of concern</p> <p>Strengthen partnerships to manage lands adjacent to the refuge and throughout Cape Cod to enhance BIDEH and priority species across the landscape</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Control nonnative invasive plant species throughout maritime shrubland, salt marsh, and freshwater pond habitats using manual tools, herbicides, or prescribed fires to ensure less than 10 percent coverage refuge-wide</p> <p>Work with partners to evaluate and map the current and historic extent of SAVs, specifically eelgrass, within the Declaration of Taking to determine whether these species are stable, decreasing, or increasing and to determine if active management of the resource is necessary</p> <p>Determine presence and abundance of purple marsh crabs in all salt marshes on the refuge; if present, initiate studies to determine if herbivory is having an impact on salt marsh vegetation and health</p> <p>Collect baseline data of flora and fauna in the subtidal areas of the refuge to help determine priority species and develop a management plan to ensure conservation of these species</p>

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<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Salt Marsh</p> <p>Objective A1.8: Continue to protect coastal salt marsh habitat through seasonal closures on North Monomoy Island to protect the quality and natural function of the marsh and provide important nesting habitat for saltmarsh sparrows and American oystercatchers.</p> <p><i>Continue to:</i></p> <ul style="list-style-type: none"> Use temporary symbolic fencing to seasonally close most salt marsh habitat on North Monomoy Island from April to September to minimize trampling of vegetation and invertebrates, and minimize disturbance to nesting saltmarsh sparrows and American oystercatchers Support partner efforts to investigate impacts of mercury on saltmarsh sparrows and natural processes that affect mercury speciation and bioavailability Support partner efforts to investigate the hybridization of saltmarsh sparrows and how it impacts the population fitness of saltmarsh sparrows and Nelson's sparrows Support partner efforts to investigate changes in tidal marshbird populations in the refuge and eastern Massachusetts by comparing current surveys to historical data Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and will inform future management 	<p>Objective B1.9: Over the next 15 years, manage at least 150 acres of coastal salt marsh (including a mix of high and low salt marsh and pool and panne habitat with no more than 10 percent invasive species), to ensure that the quality and natural function of the marsh is sustained, and provide nesting habitat for saltmarsh sparrow, American oystercatchers, foraging areas for wading birds, roosting areas for shorebirds, and nursery habitat for horseshoe crabs.</p> <p><i>In addition to objective A1.8, strategies 1 to 5: Within 1 year of CCP implementation:</i></p> <ul style="list-style-type: none"> Expand the areas of temporary symbolic fencing to include protection for salt marshes on Morris Island and South Monomoy Island Participate in regional efforts to monitor the health and integrity of salt marsh habitat on the refuge. Focus management on reducing non-climate stressors to salt marshes Install sediment elevation tables (SET) in refuge salt marshes to evaluate the effects of various factors on salt marshes' ability to keep pace with sea level rise Complete rapid assessment of vegetative composition in the North Monomoy Island salt marsh to evaluate suitability for sparrow nesting and allow for proactive development of habitat adaption efforts if needed. Determine presence and abundance of purple marsh crabs in all salt marshes on the refuge; if present, initiate studies to determine if herbivory is having an impact on salt marsh vegetation and health 	<p>Not specifically addressed under alternative C; see habitat discussion under Objective C1.5</p>	

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<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Freshwater Ponds and Marshes</p>	<p>Not specifically addressed under alternative A</p>	<p>Objective B1.10: Maintain ecological integrity in freshwater ponds on the refuge by managing freshwater ponds and marshes to have no more than 10 percent invasive species, and ensure that the quality and natural function of the habitats are maintained for migratory birds and other resources of concern.</p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Analyze 2 years of acoustic bat monitoring data to quantify importance of Monomoy refuge to migrating bats and determine if future monitoring is warranted</p> <p>Control nonnative invasive plant species, especially common reed, throughout freshwater habitats using manual tools, herbicides, or prescribed fires to ensure less than 10 percent coverage refuge-wide</p> <p>Submit samples of common reed from stands that haven't been previously tested to determine if they are native</p> <p>Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and will inform future management</p>	<p>Not specifically addressed under alternative C; see habitat discussion under Objective C1.5</p>

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<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Nearshore Marine Open Water</p>	<p>Objective A1.9: Oversee uses on 2,000 acres of nearshore marine open water, submerged aquatic vegetation beds and subtidal bottoms to conserve natural and cultural heritage and assure sustainable productivity of marine resources to benefit federal trust resources including: migrating, staging and wintering birds such as eiders, scoters, long-tailed duck, brant, bufflehead, loons, grebes, mergansers, northern gannet, terns, and gulls; marine mammals; horseshoe crabs; interjurisdictional fish; and sea turtles.</p> <p><i>Continue to:</i></p> <ul style="list-style-type: none"> Maintain and enforce closure of the refuge to horseshoe crab harvesting Reinstall permanent markers visually delineating the Declaration of Taking boundary in open waters based on Regional Surveyor's coordinates; commercial GPS software vendors will be provided digital map layers for incorporation into their software products Maintain closure of the refuge to mussel harvesting to preserve food source for red knots and American oystercatchers Evaluate aquaculture requests in open water-submerged bottom areas (below MLW) within the Declaration of Taking for compatibility and benefits to refuge resources on a case-by-case basis Participate in review and discussions with stakeholders regarding dredging of channels and deposition of dredge materials surrounding Monomoy NWR and impacts to priority wildlife and habitats Support partner efforts to study wintering sea ducks using the waters surrounding the refuge and monitor impacts of diseases affecting these populations 	<p>Objective B1.11: Protect, manage, and restore 2,000 acres of nearshore marine open water, submerged aquatic vegetation beds and subtidal bottoms to conserve natural and cultural heritage and assure sustainable productivity of marine resources to benefit federal trust resources including: migrating, staging and wintering birds such as eiders, scoters, long-tailed duck, brant, bufflehead, loons, grebes, mergansers, northern gannet, terns, and gulls; marine mammals; horseshoe crabs; interjurisdictional fish; and sea turtles.</p> <p><i>In addition to objective A1.9, strategies 1 to 10: Within 1 year of CCP implementation:</i></p> <ul style="list-style-type: none"> Prohibit bottom substrate-disturbing fishing activities such as mussel harvesting, scallop dragging, or any hydraulic dredging for shellfish within the Declaration of Taking refuge boundary in order to protect eelgrass beds and maintain productive benthic communities for wildlife. Determine appropriateness of using beach renourishment or other habitat alteration techniques in non-wilderness areas to protect habitats from the effects of erosion and sea level rise Support partner efforts to study potential impacts of offshore wind or tidal energy development to resources of concern Encourage, support, and actively participate in efforts to study shellfish and fin fish stocks, marine mammals including seals and their principal predator, the great white shark 	<p>Not specifically addressed under alternative C; see habitat discussion under Objective C1.5</p>

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<p>Refuge Goal 1: Perpetuate the biological integrity and diversity of coastal habitats to sustain native wildlife and plant communities, including species of conservation concern.</p> <p><i>Responds to Issues: How will the refuge manage priority wildlife species and other biological resources? How will the refuge conduct predator management?</i></p>			
<p>Nearshore Marine Open Water (cont.)</p>	<p>Support partner efforts to study shellfish and fin fish stocks, marine mammals including seals and their principal predator, the great white shark</p> <p>Support partner efforts to assess distribution and genetic diversity of eelgrass across the region and test it against an experimental factorial design of potential stress parameters</p> <p>Support partner efforts (New England Aquarium and Mass Audubon) to rescue stranded sea turtles and to collect dead sea turtles recovered from refuge waters for scientific research</p> <p>Facilitate and participate in research relevant to this habitat type and priority species when research has conservation implications and will inform future management</p>	<p><i>Within 5 years of CCP implementation:</i></p> <p>Work with partners to evaluate and map the current and historic extent of submerged aquatic vegetation (SAVs), specifically eelgrass, within the Declaration of Taking to determine whether these species are stable, decreasing, or increasing and to determine if active management of the resource is necessary</p> <p>Collect baseline data of flora and fauna in the subtidal areas of the refuge to help determine priority species and develop a management plan to ensure conservation of these species</p> <p>Evaluate need for “no-anchoring zones” to minimize disturbance to eelgrass beds and implement as warranted</p> <p>Evaluate the possibility of using dredge spoils to enhance beach and flats habitat on the refuge (e.g., Minimoy, flats west of Minimoy, and Morris Island Beach) outside of the wilderness area. If feasible, pursue NEPA analysis.</p>	

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<p>Refuge Goal 2: Provide the public with wildlife-dependent recreational, interpretive, and environmental educational opportunities to enhance awareness and appreciation of refuge resources and to promote stewardship of the wildlife and habitats of Monomoy NWR.</p> <p><i>Responds to Issues: What types of recreational opportunities will be provided on the refuge? How will public uses be managed? How will the refuge address access and parking?</i></p>			
<p>Access and Use</p>	<p>Objective A2.1: Allow public access to Morris Island, North Monomoy Island, South Monomoy, Minimoy Island, and the Declaration of Taking area to the extent that it will not adversely impact Federal trust resources or wilderness character, while maintaining closures that reduce disturbance to wildlife from visitors and protect suitable nesting habitat for species of concern. The exact location and timing of the closures is flexible to respond to the presence of wildlife. Visitors may participate in any compatible public use on the refuge in areas that are open to the public.</p> <p><i>Continue to:</i></p> <p>Provide parking at the refuge headquarters on Morris Island for beach and trail access</p> <p>Provide 30 parking spaces free of charge at refuge headquarters on Morris Island. Issue special use permits to two boat operators who provide access to North Monomoy and South Monomoy and allow boat access to North Monomoy and South Monomoy</p> <p>Utilizing adaptive management strive to keep Morris Island and large portions of South Monomoy Island open year-round, and re-open seasonally closed areas after chick fledging or staging seasons for migratory birds such as roseate and common terns, piping plovers, red knots, and American oystercatcher in order to provide additional wildlife viewing and photography opportunities; temporarily close portions of the refuge only when necessary to protect wildlife and their habitat based on seasonal use of priority species</p> <p>Open all of North Monomoy Island to the public from October to March. During the April to September nesting season (map 2.8) an east-west trail corridor bisecting North Monomoy Island is open to the public as well as the Broad Creek area to the south; in addition the entire perimeter of North Monomoy Island below the mean high tide line is open for public circumnavigation around North Monomoy Island</p> <p>Restrict travel on the refuge to foot traffic to maintain the wilderness character of North Monomoy Island and South Monomoy, as well as to protect sensitive nesting areas and wildlife habitat; this may include limiting access to dune areas to prevent erosion as necessary</p>	<p>Objective B2.1: With primary consideration to wildlife protection, character of the Monomoy Wilderness, and public safety, continue to allow public access to Morris Island, North Monomoy Island, South Monomoy Island (including Nauset/South Beach), and Minimoy Island while implementing a concessionaire system that accommodates an anticipated visitor increase of 25 percent. Maintain seasonal closures that reduce disturbance to wildlife from visitors and protect suitable nesting habitat for species of concern. The exact location and timing of the closures is flexible to respond to the presence of wildlife. Visitors may participate in any compatible public use on the refuge in areas that are open to the public.</p> <p><i>In addition to objective A2.1, strategies 4 to 10, and 14:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Utilizing adaptive management, strive to keep Morris Island and large portions of South Monomoy Island, including Nauset/South Beach, open year-round, and re-open seasonally closed areas after chick fledging or staging seasons for migratory birds such as roseate and common terns, piping plovers, red knots, and American oystercatcher in order to provide additional wildlife viewing and photography opportunities; temporarily close portions of the refuge only when necessary to protect wildlife and their habitat based on seasonal use of priority species</p> <p>Improve visibility of the right-of-way trail access to the western portion of Morris Island refuge property off Tisquantum Road; improve signs so visitors can easily view the access point and understand they have the right to use the path to access the refuge</p> <p>Do not allow pets, including dogs on leash, on the entire refuge, including Morris Island and the part of Nauset/South Beach that is attached to South Monomoy Island</p>	<p>Objective C2.1: With primary consideration to wildlife and wilderness character protection and public safety, allow public access to Morris Island, North Monomoy Island, South Monomoy Island (including Nauset/South Beach), and Minimoy Island while accommodating an anticipated minimum 25 percent visitation increase to the Monomoy NWR over the period. Ensure refuge visitors who access the Monomoy Wilderness use nonmotorized means, such as paddling or sail boats to get there.</p> <p><i>In addition to objective A2.1, strategies 4 to 5, 7 to 10, and 14:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Utilizing adaptive management, strive to keep Morris Island and large portions of South Monomoy Island, including Nauset/South Beach, open year-round, and re-open seasonally closed areas after chick fledging or staging seasons for migratory birds such as roseate and common terns, piping plovers, red knots, and American oystercatcher in order to provide additional wildlife viewing and photography opportunities. temporarily close portions of the refuge only when necessary to protect wildlife and their habitat based on seasonal use of priority species</p> <p>Do not allow motorized boats to land along the Monomoy Wilderness shoreline, including the tidal flats and beaches; allow paddling (kayak, canoe, rowed boats, paddle-boards) and sailing to continue</p> <p>Improve visibility of the right-of-way trail access to the western portion of Morris Island refuge property off Tisquantum Road; improve signs so visitors can easily view the access point and understand they have the right to use the path to access the refuge</p> <p>Expand the ban on pets, including dogs on leash, to include the entire refuge, including Morris Island and the part of Nauset/South Beach that is now part of South Monomoy Island</p>

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<p>Refuge Goal 2: Provide the public with wildlife-dependent recreational, interpretive, and environmental educational opportunities to enhance awareness and appreciation of refuge resources and to promote stewardship of the wildlife and habitats of Monomoy NWR.</p> <p><i>Responds to Issues: What types of recreational opportunities will be provided on the refuge? How will public uses be managed? How will the refuge address access and parking?</i></p>			
<p>Access and Use (cont.)</p>	<p>Allow motorized and non-motorized boating in refuge waters with landings prohibited in areas that are seasonally closed; map 2.7 shows recommended sites where the hazardous currents and shoals allow safe landing</p> <p>Maintain and enforce closure of the refuge to operation and landings of motorized personal watercraft (e.g., wave runners, jet skis) on the refuge land and in refuge waters</p> <p>Maintain and enforce closure of the refuge to kiteboarding operation within the Declaration of Taking-Marine Protected Area boundary</p> <p>Use the existing rights-of-way on Tisquantum Road, Wikis Way, and Stage Island Road to access refuge properties</p> <p>Phase out non-Service parking and dinghy storage at Stage Island Lot 7b</p>	<p>Work to acquire additional lot adjacent to the Stage Island lot for refuge use only</p> <p>Include parking requirements in all special use permits issued to commercial guides, photographers, and others</p> <p><i>Within 3 years of CCP implementation:</i></p> <p>Provide vehicle parking at the Morris Island refuge headquarters and visitor contact station lot 24 hours daily; require paid parking from 9 a.m. to 6 p.m. daily with a 4-hour time limit during the June 1 to September 15 peak visitor season; parking would be free at other times</p>	<p>Work to acquire additional parking area adjacent to the Stage Island lot for refuge use only; terminate all parking privileges for non-Service staff purposes within 60 days of CCP completion</p> <p>Include parking requirements in all special use permits issued to commercial guides, photographers and others</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Develop an entrance fee system that includes a 1-day entrance fee that would be charged per car or per group if arriving via foot or bicycle.</p> <p>Use funds from the Service's Recreational Fee Program to maintain and improve visitor facilities and/or the hiring of temporary staff to provide enhanced visitor services.</p>

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<p>Refuge Goal 2: Provide the public with wildlife-dependent recreational, interpretive, and environmental educational opportunities to enhance awareness and appreciation of refuge resources and to promote stewardship of the wildlife and habitats of Monomoy NWR.</p> <p><i>Responds to Issues: What types of recreational opportunities will be provided on the refuge? How will public uses be managed? How will the refuge address access and parking?</i></p>			
<p>Access and Use (cont.)</p>	<p>Grant up to two special use permits to ferry operations with drop-offs to North Monomoy Island and South Monomoy Island</p> <p>Allow one ferry company to base their operations out of the Morris Island parking lot with exclusive use of refuge facilities and lands</p> <p>Explore funding opportunities with partners to provide shuttle service to the refuge from offsite satellite parking area(s) and improve shoulder parking along the causeway</p> <p>Assist in enforcement of the Marine Mammal Protection Act through regular communication and coordination with staff from partner agencies and organizations including National Marine Fisheries Service, National Oceanic and Atmospheric Administration, and International Fund for Animal Welfare</p>	<p>Replace the current motorized seal tour-ferry access system from the refuge headquarters on Morris Island with a competitive, multi-year concession, or special use permit holders if no concessionaire is identified. The concession would operate from refuge headquarters, but shuttle visitors from an off-refuge parking site to Morris Island and ferry visitors to North Monomoy Island and South Monomoy Island, conduct interpretative natural and cultural history tours, arrange for refuge permitted fishing or waterfowl hunting guides, rent kayaks, and provide other visitor related services. Provide two parking spaces for the concessionaire and shuttle vans. The concessionaire would be encouraged to manage guide services that facilitate hiking, paddling, or sailing, and encourage visitors to engage in non-motorized boating in order to promote a wilderness experience.</p> <p>All commercial wildlife watching tours, passenger ferry service, kayak or paddling tours, and hunting and fishing guides would need a refuge permit to operate within the refuge, regardless of whether vessels or passengers make a refuge landfall</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Through local and regional partners, provide a local-area shuttle serving Morris Island refuge facilities (and other destinations in Chatham) from secure, satellite parking locations during the June 1 to September 15 peak visitor season</p> <p>Work with municipal partners on the use of a town-owned or private parking facility that could serve as a satellite parking facility that could serve as a shuttle service that would bring visitors to the refuge</p> <p>Assist the Town of Chatham to relocate the fencing and improve the shoulder on the east side of the Morris Island Road causeway to better accommodate shuttle passage, parked cars, and emergency vehicles</p>	<p>Replace the current motorized seal tour-ferry access system from the refuge headquarters on Morris Island with a competitive, multi-year concession, or special use permit holders if no concessionaire is identified. All commercial wildlife watching tours, passenger ferry service, kayak or paddling tours, and hunting and fishing guides would, within 2 years of CCP approval, need a refuge permit to operate within the refuge Declaration of Taking boundary, regardless of whether vessels or passengers make a refuge landfall</p> <p>Through local and regional partners, provide a local-area shuttle serving Morris Island refuge facilities (and other destinations in Chatham) from secure, satellite parking locations during the June 1 to September 15 peak visitor season</p> <p>Expand shuttle beyond simple passenger transport, to include transport of kayaks and gear and bicycles in addition to people</p> <p>Work with municipal partners on the use of a town-owned or private parking facility that could serve as a satellite parking locations for a shuttle service that would bring visitors to the refuge</p> <p>Assist the Town of Chatham to relocate the fencing and improve the shoulder on the east side of the Morris Island Road causeway to better accommodate shuttle passage, parked cars, and emergency vehicles</p> <p>Encourage the Town of Chatham to create a multi-use bicycle and pedestrian path on one side of the causeway and provide assistance as possible to help the town implement this project</p> <p>Provide bicycle and pedestrian facilities and amenities through local and regional partners at refuge headquarters, Chatham area shuttle stops, and other high priority downtown locations</p>

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<p>Access and Use (cont.)</p>		<p>Encourage the Town of Chatham to create a multi-use bicycle and pedestrian path on one side of the causeway and provide assistance as possible to help the town implement this project</p> <p>Provide bicycle and pedestrian facilities and amenities through local and regional partners at and around refuge headquarters, Chatham area shuttle stops, and other high priority downtown locations</p> <p>Through local and regional partners, improve motor vehicle, bicycle, and pedestrian route directional signs to refuge Morris Island facilities including designated trails, satellite parking and shuttle stops and concessionaire's off-refuge facilities; this may involve the erection of new signs within Service right-of-way on land owned by others</p> <p>Through local and regional partners, add directional and informational signs throughout Chatham, along Route 6, and elsewhere on Cape Cod; improve traveler information on Service and refuge Web and social media sites, and sites managed by local and regional partners</p>	<p>Through local and regional partners, improve motor vehicle, bicycle, and pedestrian route directional signs to refuge Morris Island facilities including designated trails, satellite parking and shuttle stops and concessionaire's off-refuge facilities; this may involve the erection of new signs within Service rights-of-way on land owned by others</p> <p>Through local and regional partners, add directional and informational signs throughout Chatham, along Route 6, and elsewhere on Cape Cod; improve traveler information on Service and refuge Web and social media sites, and sites managed by local and regional partners</p> <p>Complete a Visitor Services 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</p>

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<p>Access and Use (cont.)</p>		<p>Complete a visitor services 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 objectives, and to evaluate visitor experiences; modify or restrict access, or adapt management strategies as warranted</p> <p>Encourage paddling as a means of transportation to the Monomoy Wilderness portions of the refuge by collaborating with local and regional partners or the refuge concessionaire to provide kayaking launch facilities, rentals, instruction, and group outings to the Monomoy Wilderness</p> <p>Explore feasibility of improving non-motorized watercraft launch site at northern stairway and existing asphalt path or along the Morris Island causeway; examine possibilities for constructing a waterfront access way meeting ADA requirements at the headquarters site or across the Tisquantum Road right-of-way</p> <p>Extend an ADA-compliant boardwalk segment from the existing Morris Island Trail boardwalk to the Nauset/South Beach-Outermost Harbor overlook trail stops</p> <p><i>Within 7 years of CCP implementation:</i></p> <p>Work with partners to evaluate possible locations closer to Main Street in Chatham or somewhere in Harwich to establish a new visitor contact station. When funding allows, open this new facility, which could be shared space with partner groups, and transfer exhibits from the current refuge headquarters, which would primarily serve as administrative offices in the future.</p>	<p>Encourage paddling as a means of transportation to the Monomoy Wilderness portions of the refuge, particularly North Monomoy Island, by collaborating with local and regional partners or the refuge concessionaire to provide kayaking launch facilities, rentals, instruction, and group outings to the Monomoy Wilderness</p> <p>Explore feasibility of improving non-motorized watercraft launch site at northern stairway and existing asphalt path or along the Morris Island causeway; examine possibilities for constructing a waterfront access way meeting ADA requirements at the headquarters site or across the Tisquantum Road right-of-way</p> <p>Extend an ADA-compliant boardwalk segment from the existing Morris Island Trail boardwalk to the Nauset/South Beach-Outermost Harbor overlook trail stops</p>

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<p>Interpretation</p> <p>Objective A2.2: Maintain the interpretation opportunities available on Morris Island and provide interpretive materials that inform visitors about the purpose and mission of the refuge, Refuge System, the Monomoy Wilderness, the unique natural resources of the refuge and its importance to the recovery and management of migratory birds.</p> <p><i>Continue to:</i></p> <p>Welcome visitors to the visitor contact station on Morris Island and strive to have it open year-round; with reduced hours from October through April; open 7 days a week during summer months when the refuge hires interns</p> <p>Inform the public about the refuge and Refuge System, its purpose and mission, and its resources using brochures, rack cards, interpretative panels on trails, and the refuge Web site</p> <p>Update refuge literature and daily/seasonal information (e.g., flood warning, high tide info, etc.) in a timely manner as conditions and access change based on bird nesting and seal haulout occurrences</p> <p>Provide refuge visitors with wilderness ethics and stewardship information and Monomoy Wilderness information through the visitor contact station, Web site, social media, printed materials, and community outreach activities</p> <p>Maintain the interpretive panels along the Morris Island Trail</p> <p>Install seven new or replacement interpretive panels along Morris Island Trail</p> <p>Develop temporary, portable exhibits designed to describe Monomoy's biotic diversity including wildlife, plants, fish, natural processes, its wilderness character and their management at Monomoy refuge</p>	<p>Objective B2.2: Ensure that at least 75 percent of refuge visitors would receive high quality information about the purposes and mission of the refuge, Refuge System, and the Monomoy Wilderness. Visitors would have increased opportunities to recognize the unique natural resources of the refuge and its importance to the recovery and management of migratory birds including the recovery of listed species, and enduring wilderness resource, and coastal resource stewardship of the outer Cape region.</p> <p><i>In addition to objective A2.2, strategies 1 to 9 and 11: Within 1 year of CCP implementation:</i></p> <p>Improve informational materials at Morris Island kiosk to highlight the importance of the Monomoy Wilderness and the importance of the refuge to threatened and endangered species as a migration stopover site</p> <p>Issue permits for interpretive commercial water-based tours and interpretive commercial land-based natural history and cultural history tours until a concessionaire contract is awarded</p> <p>Work with concessionaire or professional guide services to provide natural history and wildlife tours of the islands consisting of day trips on various natural history and resource topics</p> <p>Conduct seasonal interpretive programs at the refuge by refuge staff, interns, and volunteers, and provide roving interpreters on the Morris Island Trail; content would include wilderness area components</p> <p>Increase public awareness of the Monomoy Wilderness through outreach and social media, including outreach to audiences who engage in water-dependent activities (e.g., anglers, divers, paddlers, etc.)</p>	<p>Objective C2.2: Within 5 years, refuge visitors would receive information regarding the Service, the Refuge System, the relationship of refuge habitats and management to endangered species recovery, biotic diversity, wilderness character and ethics, and natural coastal processes that shape the land itself and plant and animal communities. Interpretive opportunities would be offered primarily through virtual and self-guided means which would focus on key refuge messages such as migratory birds, listed species, and wilderness character.</p> <p><i>In addition to objective A2.2, strategies 1 to 5, 7, 8, and 11: Within 1 year of CCP implementation:</i></p> <p>Improve informational materials at Morris Island kiosk to highlight the importance of the Monomoy Wilderness and the importance of the refuge to threatened and endangered species as a migration stopover site</p> <p>Issue permits for interpretive commercial water-based tours and interpretive commercial land-based natural history and cultural history tours until a concessionaire contract is awarded</p> <p>Work with concessionaire or professional guide services to provide natural history and wildlife tours of the islands consisting of day trips on various natural history and resource topics</p> <p>Conduct seasonal interpretive programs at the refuge by refuge staff, interns, and volunteers, and provide roving interpreters on the Morris Island Trail; content will include wilderness area components</p> <p>Increase public awareness of the Monomoy Wilderness through outreach and social media, including outreach to audiences who engage in water-dependent activities (e.g., anglers, divers, paddlers, etc.)</p>	

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<p>Interpretation (cont.)</p>	<p>Provide an informational kiosk on Morris Island that contains signs and literature that orient visitors to the refuge and inform them of public use regulations</p> <p>Issue permits for interpretive commercial water-based tours and interpretive commercial land-based tours</p> <p>Conduct seasonal interpretive programs by refuge staff, interns, and volunteers and provide roving interpreters on the Morris Island Trail</p> <p>Issue press releases to inform the public about refuge activities and accomplishments</p>	<p>Provide comment boxes and an online form for refuge visitors to provide feedback about their refuge experience. Evaluate comments and respond appropriately to address issues affecting the quality of the visitor experience.</p> <p>Develop voluntary guidelines and an interactive game for visitors that address visitor behavior and importance to maintain bird and wildlife buffers and of practicing “leave no trace” and other wilderness ethics</p> <p>Initiate an outreach campaign to provide information to all visitors about the importance of minimizing disturbance to migrating and staging birds; the outreach message would focus on a recommended viewing distance of at least 50 m to allow birds to remain undisturbed in their resting and foraging areas which are critical to successful migration</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Complete a visitor services 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 restrict access, or adapt management strategies as warranted</p>	<p>Provide comment boxes and an online form for refuge visitors to provide feedback about their refuge experience. Evaluate comments and respond appropriately to address issues affecting the quality of the visitor experience</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Complete a visitor services 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</p>

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<p>Interpretation (cont.)</p>		<p>Create and disseminate fact sheets about key refuge resources (e.g., endangered and threatened species, barrier island ecosystem, salt marsh habitat, etc.), refuge management (e.g., predator management, seasonal closures, etc.), Monomoy Wilderness, and watchable wildlife (e.g., seals, etc.)</p> <p><i>Within 7 years of CCP implementation:</i></p> <p>Use virtual technology to conduct interpretation such as text tours, podcasts, and virtual geocaching and letterboxing</p> <p>Explore the option of creating a smartphone application (or other future technology) with Monomoy Wilderness coordinates and information about the wilderness designation</p> <p>Develop podcasts and other materials designed to provide portable interpretation to refuge visitors about refuge resources (e.g., species of concern, migratory birds, etc.) and the Monomoy Wilderness</p> <p>Develop a self-guided interpretive kayak trail and brochure</p> <p>Provide additional summer programs on and offsite that include guided nature walks and an evening lecture series on timely refuge topics</p> <p>Redesign current visitor contact station interpretive materials and displays using formal storyline and professionally designed exhibits</p> <p><i>Within 10 years of CCP implementation:</i></p> <p>Develop self-guided interpretive brochure for a Powder Hole to Monomoy Point Lighthouse trail that interprets the unique natural and cultural history of the area, wildlife resources and wilderness</p> <p>Develop seasonal paddling tours/routes using podcasts to describe refuge wildlife, habitats, and management actions</p>	<p>Create and disseminate fact sheets about key refuge resources (e.g., endangered and threatened species, barrier island ecosystem, salt marsh habitat, etc.), refuge management (e.g., predator management, seasonal closures, etc.), Monomoy Wilderness, and watchable wildlife (e.g., seals, etc.)</p> <p><i>Within 7 years of CCP implementation:</i></p> <p>Use virtual technology to conduct interpretation such as text tours, podcasts, and virtual geocaching and letterboxing</p> <p>Explore the option of creating a smartphone application with Monomoy Wilderness coordinates and information about the wilderness designation</p> <p>Develop podcasts and other materials designed to provide portable interpretation to refuge visitors about refuge resources (e.g., species of concern, migratory birds, etc.) and the Monomoy Wilderness</p> <p>Develop a self-guided interpretive kayak trail and brochure</p> <p>Increase the focus on the role of natural processes in shaping refuge habitats in refuge informational products and delivery</p> <p>Work with Arthur Carhart Wilderness Center to develop and provide materials that inform the public about wilderness areas</p> <p><i>Within 10 years of CCP implementation:</i></p> <p>Develop seasonal paddling tours/routes using podcasts to describe refuge wildlife, habitats, and management actions</p>

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<p>Environmental Education (cont.)</p>		<p>Determine what environmental education subjects are already being delivered to which age group audiences in the surrounding communities or where gaps remain in program subjects or age groups being served</p> <p><i>Within 7 years of CCP implementation:</i></p> <p>Work with partners to conduct a pilot study to determine age-appropriate curriculum content and strategize to target education efforts to age group currently not being served by other education organizations</p> <p><i>Within 10 years of CCP implementation:</i></p> <p>Create at least two curriculum-based environmental education programs in coordination with partners that can be utilized on or offsite that incorporate the Massachusetts curriculum frameworks as well as key refuge messages that can be utilized by local and regional school districts based on findings of pilot study</p> <p>Expand efforts to coordinate with area environmental educators to integrate refuge programs with local environmental education programs</p>	<p><i>Within 7 years of CCP implementation:</i></p> <p>Work with partners to conduct a pilot study to determine age-appropriate curriculum content and strategize to target education efforts to age group currently not being served by other education organizations</p> <p><i>Within 10 years of CCP implementation:</i></p> <p>Create at least one curriculum-based environmental education program in coordination with partners that can be utilized on or offsite that incorporate the Massachusetts curriculum frameworks as well as key refuge messages that can be utilized by local and regional school districts based on findings of pilot study</p>

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<p>Wildlife Observation & Photography</p>	<p>Objective A2.4: Over the life of the plan, continue to provide visitors with the opportunity to engage in wildlife observation and photography on the refuge by maintaining the refuge's existing boardwalk and overlook on the Morris Island Trail, and continued coordination with ferry vendors to provide access to North Monomoy Island and South Monomoy.</p> <p><i>Continue to:</i></p> <ul style="list-style-type: none"> Allow wildlife observation, which includes nature study, year-round on refuge lands open to public use from ½ hour before sunrise to ½ after sunset; prohibit touching, feeding, or harassing wildlife Maintain the two viewing platforms on Morris Island (map 1.2) Allow commercial filming and photography on the refuge only when there is a direct benefit to the refuge or the Service; all allowed commercial filming and photography would operate under a special use permit once determined compatible by the refuge manager. Allow photography in any area of the refuge open to the public Host a youth or adult photography contest 	<p>Objective B2.4: Provide opportunities for refuge visitors to engage in wildlife observation and photography in a manner that minimizes disturbance to refuge habitats and wildlife, striving to ensure that 75 percent of visitors report a high-quality experience.</p> <p><i>In addition to objective A2.4, strategies 1, 2, 4, and 5: Within 1 year of CCP implementation:</i></p> <ul style="list-style-type: none"> Allow commercial filming and photography on the refuge only when there is a direct benefit to the refuge or the Service. All allowed commercial filming and photography would operate under a special use permit issued by the refuge manager. Commercial photography would also have to support wilderness and be conducted in a manner consistent with protecting wilderness character. <i>Within 3 years of CCP implementation:</i> Develop flexible closures to minimize disturbance to migrating and staging shorebirds Work with local photography and birding clubs to promote awareness of wildlife and wilderness values of the refuge, to ensure that members understand refuge regulations, and to maintain a connection to one of the most important refuge constituencies <i>Within 5 years of CCP implementation:</i> Complete a visitor services plan for the refuge; establish thresholds of acceptable change to resources resulting from public use; and develop monitoring strategies to measure change, measure achievement of objective, and evaluate visitor experiences; modify or restrict access, or adapt management strategies as warranted Provide trails on refuge lands for wildlife observation; the wilderness trails would not be maintained by refuge staff but would be clearly marked by satellite coordinates so that visitors may use the GPS-enabled devices to find the path, if necessary 	<p>Objective C2.4: Over the next 15 years, increase the number of wildlife observation and photography visits by 50 percent in a manner consistent with preserving wilderness, taking "nothing but photographs" and leaving behind "nothing but footprints."</p> <p><i>In addition to objective A2.4, strategies 1 to 5: Within 5 years of CCP implementation:</i></p> <ul style="list-style-type: none"> Complete a visitor services 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 objectives; and to evaluate visitor experiences; modify or restrict access, or adapt management strategies as warranted Provide trails on refuge lands for wildlife observation; the wilderness trails would not be maintained by refuge staff but would be clearly marked by satellite coordinates so that visitors may use the GPS-enabled devices to find the path, if necessary Evaluate use of critter cam(s) so public can observe nesting behavior online which would facilitate a connection to animals they may not be able to view in person Develop guidelines for group visits into the Monomoy Wilderness and for local organizations that conduct photography trips on the refuge Work with a concessionaire to develop photography tour with emphasis on the unique values and opportunities of the Monomoy Wilderness <i>Within 7 years of CCP implementation:</i> Evaluate and implement opportunities for universally accessible observation; enhance existing boardwalk at the refuge headquarters to make it ADA accessible for improved observation opportunities at the overlook on Morris Island Trail

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<p>Wildlife Observation & Photography (cont.)</p>		<p>Evaluate use of critter cam(s) so public can observe nesting behavior online which would facilitate a connection to animals they may not be able to view in person</p> <p>Work with visiting clubs to ensure disturbance is minimized when birding expeditions occur</p> <p>Develop guidelines for group visits into the Monomoy Wilderness and for local organizations that conduct photography trips on the refuge</p> <p>Work with a concessionaire to highlight prime wildlife photography and observation opportunities</p> <p>Develop portal for eBird Web site (www.ebird.org) information that is reported by visitors to the refuge</p> <p><i>Within 7 years of CCP implementation:</i></p> <p>Evaluate and implement opportunities for universally accessible observation; enhance existing boardwalk at the refuge headquarters to make it ADA accessible for improved observation opportunities at the overlook on Morris Island Trail</p> <p>Install an additional viewing platform or photography blind on Morris Island</p>	

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<p>Refuge Goal 2: Provide the public with wildlife-dependent recreational, interpretive, and environmental educational opportunities to enhance awareness and appreciation of refuge resources and to promote stewardship of the wildlife and habitats of Monomoy NWR.</p> <p><i>Responds to Issues: What types of recreational opportunities will be provided on the refuge? How will public uses be managed? How will the refuge address access and parking?</i></p>			
<p>Fin Fishing, Lobstering, and Crabbing</p>	<p>Objective A2.5: Continue to provide high-quality fishing opportunities to refuge visitors within areas otherwise open to public use.</p> <p><i>Continue to:</i></p> <ul style="list-style-type: none"> Allow fin fishing from all refuge lands otherwise open to public use, from ½ hour before sunrise to ½ hour after sunset, in accordance with Massachusetts and Federal regulations, including possessing a saltwater or freshwater fishing license recognized by the Commonwealth of Massachusetts. Allow fishing in the open waters, above submerged lands, under State and Federal regulations. Included fishing activities are: demersal long line fishing; mid-water trawl fishing; hook and line/rod and reel fishing; lobster, crab, and whelk pot fishing; and hand-harvest of scallops. Allow anglers to fish on Morris Island 24 hours per day in accordance with all Federal and State fishing regulations Allow freshwater fishing in the ponds on South Monomoy during daylight hours Allow commercial fishing guides to conduct fin fishing on the refuge in areas that are open to fishing in accordance with State seasons 	<p>Objective B2.5: Provide opportunities for fishing, and strive to ensure that 50 percent of visitors engaged in recreational fishing report having a high-quality experience.</p> <p><i>In addition to objective A2.5, strategies 1 to 4:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <ul style="list-style-type: none"> Conduct outreach about new fishing opportunities on the refuge Provide seasonal information (e.g., conditions, species, fish runs) on refuge’s Web site, at Morris Island kiosk, and distribute to local fishing organizations, guides and shops, which would include “closed areas” maps and any additional refuge-specific regulations All commercial fishing guides would need a refuge permit to operate within the refuge Declaration of Taking boundary, regardless of whether vessels or passengers make a refuge landfall <p><i>Within 3 years of CCP implementation:</i></p> <ul style="list-style-type: none"> Replace the current motorized seal tour-ferry access system from the refuge headquarters on Morris Island with a competitive, multi-year concession, or special use permit holders if no concessionaire is identified; the concession would arrange for refuge permitted fishing or waterfowl hunting guides and provide a means system to bring anglers and their guides to the refuge along with providing other visitor related services Establish station at headquarters for recycling monofilament and safely disposing of fish line 	<p>Objective C2.5: Provide opportunities for fishing in a manner consistent with preserving and promoting wilderness character, and ensure that 75 percent of visitors engaged in recreational fishing report that they had a high-quality experience.</p> <p><i>In addition to objective A2.5, strategies 1 to 4:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <ul style="list-style-type: none"> Provide seasonal information (e.g., conditions, species, fish runs) on refuge’s Web site, at Morris Island kiosk, and distribute to local fishing organizations, guides and shops, which would include “closed areas” maps and any additional refuge-specific regulations <i>Within 3 years of CCP implementation</i> Replace the current motorized seal tour-ferry access system from the refuge headquarters on Morris Island with a competitive, multi-year concession or special use permit holders if no concessionaire is identified. The concession would arrange for refuge permitted fishing or waterfowl hunting guides and provide a means system to bring anglers and their guides to the refuge along with providing other visitor related services Provide recreational anglers and their commercial guides permits to operate, using non-motorized transport in the waters within the Declaration of Taking through the refuge concessionaire agreement (as authorized sub-permittees) or special use permit

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<p>Refuge Goal 2: Provide the public with wildlife-dependent recreational, interpretive, and environmental educational opportunities to enhance awareness and appreciation of refuge resources and to promote stewardship of the wildlife and habitats of Monomoy NWR.</p> <p><i>Responds to Issues: What types of recreational opportunities will be provided on the refuge? How will public uses be managed? How will the refuge address access and parking?</i></p>			
<p>Fin Fishing, Lobstering, and Crabbing (cont.)</p>		<p><i>Within 5 years of CCP implementation:</i></p> <p>Complete a visitor services 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</p> <p>Work with partners and coordinate with the State to develop a fishing brochure that informs anglers about refuge resources and seasonal closures that would be available on the refuge's Web site and at Morris Island kiosk</p> <p>Work with partners to establish an annual fishing event on the refuge</p> <p><i>Within 10 years of CCP implementation:</i></p> <p>Evaluate the fishing program; modify or restrict access, or adapt management strategies as warranted</p>	<p>Establish station at headquarters for recycling monofilament and safely disposing of fish line</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Complete a visitor services 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</p> <p>Work with partners and coordinate with the State to develop a fishing brochure that informs anglers about refuge resources and seasonal closures that would be available on the refuge's Web site and at Morris Island kiosk</p> <p><i>Within 10 years of CCP implementation:</i></p> <p>Evaluate the fishing program; modify or restrict access, or adapt management strategies as warranted</p>

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<p>Refuge Goal 2: Provide the public with wildlife-dependent recreational, interpretive, and environmental educational opportunities to enhance awareness and appreciation of refuge resources and to promote stewardship of the wildlife and habitats of Monomoy NWR.</p> <p><i>Responds to Issues: What types of recreational opportunities will be provided on the refuge? How will public uses be managed? How will the refuge address access and parking?</i></p>			
<p>Shellfishing</p>	<p>Objective A2.6: Continue to allow Town of Chatham residents and refuge visitors to shellfish using non-mechanized hand raking tools only, and in accordance with Town of Chatham Shellfish Rules and Regulations.</p> <p><i>Continue to:</i></p> <p>Allow clamming using non-mechanized, hand methods on the majority of intertidal habitats year round (following State and Town regulations)</p> <p>Coordinate with the Town of Chatham Shellfish Warden as needed to discuss shellfish resource management and harvest levels and harvest regulations and enforcement</p>	<p>Objective B2.6: Allow refuge visitors to harvest subterranean shellfish (softshell clams, quahogs, and razor clams) using non-mechanized hand raking tools only and no artificial means of extraction (such as salt and chlorine), in accordance with Town of Chatham Shellfishing Rules and Regulations or additional refuge regulations.</p> <p><i>In addition to objective A2.6, strategy 1:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Coordinate with the Mass Division of Marine Fisheries and the Town of Chatham Shellfish Warden to review annual use, obtain harvest records, promote and ensure the sustainability of the shellfish resource on the refuge</p> <p>Ensure information about the refuge's prohibition on the use of salt or chlorine or other artificial means of extraction to harvest razor clams is transmitted to local clammers</p> <p>Start to enforce the existing prohibition on the use of wheeled carts and other forms of mechanical transport in Monomoy Wilderness</p> <p>Close the refuge to the harvest of mussels</p> <p>Prohibit bottom substrate disturbing fishing activities such as mussel harvesting, scallop dragging, or any hydraulic dredging for shellfish within the Declaration of Taking refuge boundary</p> <p>Coordinate with Town of Chatham Shellfish Warden to ensure all permitted shellfishers using Monomoy refuge acknowledge being provided with information about the refuge purpose and mission, regulations, seasonal closures, and wilderness ethics and stewardship</p> <p><i>Within 3 years of CCP implementation:</i></p> <p>Update the refuge fishing plan and regulations to allow the hand harvest of subterranean shellfish using methods that preserve wilderness character. Do not allow extractive methods such as salt or chlorine</p>	<p>Objective C2.6: Allow refuge visitors to harvest subterranean shellfish (softshell clams, quahogs, and razor clams) using non-mechanized hand raking tools only and no chemical means of extraction (such as salt and chlorine), in accordance with Town of Chatham Rules and Regulations or additional refuge regulations.</p> <p><i>In addition to objective A2.6, strategy 1:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Coordinate with Mass Division of Marine Fisheries and the Town of Chatham Shellfish Warden to review annual use, obtain harvest records, promote and ensure the sustainability of the shellfish resource on the refuge</p> <p>Start to enforce the existing prohibition on the use of wheeled carts and other forms of mechanical transport in Monomoy Wilderness.</p> <p>Require use of only non-mechanized, hand operated harvesting equipment; prohibit all motorized and chemical means for extracting shellfish from the sediment</p> <p>Prohibit the harvest of mussels</p> <p>Prohibit bottom substrate disturbing fishing activities such as mussel harvesting, scallop dragging, or any hydraulic dredging for shellfish within the Declaration of Taking refuge boundary</p> <p>Coordinate with Town of Chatham Shellfish Warden to ensure all permitted shellfishers using Monomoy refuge acknowledge being provided with information about the refuge purpose and mission, regulations, seasonal closures, and wilderness ethics and stewardship</p> <p><i>Within 3 years of CCP implementation:</i></p> <p>Update the refuge fishing plan and regulations to allow the hand harvest of subterranean shellfish using methods that preserve wilderness character. Do not allow extractive methods such as salt or chlorine</p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 2: Provide the public with wildlife-dependent recreational, interpretive, and environmental educational opportunities to enhance awareness and appreciation of refuge resources and to promote stewardship of the wildlife and habitats of Monomoy NWR.</p> <p><i>Responds to Issues: What types of recreational opportunities will be provided on the refuge? How will public uses be managed? How will the refuge address access and parking?</i></p>			
<p>Waterfowl Hunting</p>	<p>Waterfowl hunting not currently allowed</p>	<p>Objective B2.7: Officially open up to 40 percent of the refuge within the Declaration of Taking to waterfowl hunting in accordance with Federal law and Massachusetts regulations.</p> <p><i>Within 3 years of CCP implementation:</i> Develop a hunt opening package, conduct NEPA analysis and public review, and develop a hunt plan; develop monitoring strategies to measure change, measure achievement of objective, and to evaluate the hunt program; modify or restrict access, or adapt management strategies as warranted</p> <p>Open a portion of Monomoy NWR to waterfowl hunting in accordance with Federal, State, and local hunting regulations. There will be no fee for individual permits but there will be a minimal processing fee charged by the third party vendor that issues refuge hunt permits.</p> <p>Require all commercial hunting guides providing guiding services within North Monomoy Island, South Monomoy, including wilderness and non-wilderness areas to apply for and receive a special use permit to conduct guiding on the refuge (50 CFR 27.97). The fee for this SUP would not be less than \$100 or more than \$500 with all monies minus administration costs, to enhance the hunting program and the hunters' experience.</p>	<p>Objective C2.7: Officially open up to 40 percent of the refuge within the Declaration of Taking to waterfowl hunting in accordance with Federal law and Massachusetts regulations.</p> <p><i>Within 3 years of CCP implementation:</i> Develop a hunt opening package, conduct NEPA analysis and public review, and develop a hunt plan; develop monitoring strategies to measure change, measure achievement of objective, and to evaluate the hunt program; modify or restrict access, or adapt management strategies as warranted</p> <p>Open a portion of Monomoy NWR to waterfowl hunting in accordance with Federal, State, and local hunting regulations. There will be no fee for individual permits but there will be a minimal processing fee charged by the third party vendor that issues refuge hunt permits.</p> <p>Require all commercial guides providing guiding services within North Monomoy Island, South Monomoy, including wilderness and non-wilderness areas to apply for and receive a special use permit to conduct guiding on the refuge (50 CFR 27.97); the fee for this SUP would not be less than \$100 or more than \$500 with all monies minus administration costs, to enhance the hunting program and the hunters' experience</p> <p>In an effort to maintain and enhance the wilderness experience, motorized boat landing in wilderness and the use of decoys on the shoreline would be prohibited</p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 3: Communicate and collaborate with local communities, Federal and state agencies, and conservation organizations to promote natural resource conservation and to support the goals of the refuge and the mission of the U.S. Fish and Wildlife Service.</p> <p><i>Responds to Issues: How will the refuge convey its messages to the public? How will the refuge foster relationships with the local community and partners?</i></p> <p>Public Outreach</p> <p>Objective A3.1: Continue to conduct outreach to residents and visitors to the Cape Cod region about the refuge and refuge activities, via the visitor contact station, social networking sites, and refuge Web site.</p> <p><i>Continue to:</i></p> <ul style="list-style-type: none"> Update and print brochures and rack cards and make them available to the Chamber of Commerce and tourist attractions Use Internet resources to inform the public about the refuge, its mission, and management actions Issue press releases to inform the public about refuge activities, respond to media inquiries, and publish our accomplishments online Give presentations about refuge management actions and wildlife at venues such as the Cape Cod Natural History Conference Occasionally participate in local festivals and parades Work with Friends group and volunteers to increase refuge activities and funding opportunities Speak about the refuge and its purpose to local service and civic organizations, and regionwide conservation partners Educate visitors and boaters to maintain a 150-foot minimum distance from seals in accordance with the Northeast Seal Watching Guidelines and Marine Mammal Protection Act 	<p>Objective B3.1: Over the next 10 years, expand public information dissemination efforts with a target of annually reaching 100,000 people, and participate in at least 5 offsite opportunities within the local community or the outer Cape region, so residents and visitors can learn about the refuge's unique coastal barrier ecosystem, Refuge System, and National Wilderness Preservation System.</p> <p><i>In addition to objective A3.1, strategies 1 to 7:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <ul style="list-style-type: none"> Promote an outreach campaign (already initiated by National Marine Fisheries Service, National Oceanic and Atmospheric Administration, International Wildlife Coalition, and Cape Cod Stranding Network) to provide information to all visitors about the importance of abiding by the Marine Mammal Protection Act and minimizing disturbance to marine mammals. The outreach message would focus on a recommended viewing distance of at least 150 feet to allow marine mammals undisturbed resting and foraging areas which are critical to survival. <p><i>Within 5 years of CCP implementation:</i></p> <ul style="list-style-type: none"> Develop and distribute rack cards and refuge brochures throughout Chatham and neighboring towns to increase awareness of the refuge, its importance to Federal-listed threatened and endangered species, opportunities for refuge visitors, and the Monomoy Wilderness Provide and maintain refuge informational displays at other frequently visited refuge partner locations 	<p>Objective C3.1: Over the next 10 years, expand public information dissemination efforts with a target of annually reaching 100,000 people, and participate in at least 3 offsite opportunities annually within the local community or the Cape Cod region, so residents and visitors can learn about the Monomoy NWR coastal barrier ecosystem, the Monomoy Wilderness, and the role of the Refuge System in protecting and managing those enduring resources.</p> <p><i>In addition to objective A3.1, strategies 1 to 6:</i></p> <p><i>Within 1 year of CCP implementation:</i></p> <ul style="list-style-type: none"> Speak about the refuge and its purpose, upon invitation only, to local service and civic organizations, and regionwide conservation partners Promote an outreach campaign (already initiated by National Marine Fisheries Service, National Oceanic and Atmospheric Administration, International Wildlife Coalition, and Cape Cod Stranding Network) to provide information to all visitors about the importance of abiding by the Marine Mammal Protection Act and minimizing disturbance to marine mammals; the outreach message would focus on a recommended viewing distance of at least 150 feet to allow marine mammals undisturbed resting and foraging areas which are critical to survival <p><i>Within 5 years of CCP implementation:</i></p> <ul style="list-style-type: none"> Develop and distribute rack cards and refuge brochures throughout Chatham and neighboring towns to increase awareness of the refuge, its importance to federally listed threatened and endangered species, opportunities for refuge visitors, and the Monomoy Wilderness 	

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<p>Refuge Goal 3: Communicate and collaborate with local communities, Federal and state agencies, and conservation organizations to promote natural resource conservation and to support the goals of the refuge and the mission of the U.S. Fish and Wildlife Service.</p>	<p><i>Responds to Issues: How will the refuge convey its messages to the public? How will the refuge foster relationships with the local community and partners?</i></p>		
<p>Public Outreach (cont.)</p>		<p>Initiate an outreach campaign to provide information to all visitors about the importance of minimizing disturbance to migrating and staging birds. The outreach message would focus on a recommended viewing distance of at least 50 m to allow birds to remain undisturbed in their resting and foraging areas which are critical to successful migration.</p> <p><i>Within 7 years of CCP implementation:</i></p> <p>Deliver refuge information through select video clips or live-streaming, real-time wireless wildlife camera images</p> <p>Develop tools to conduct outreach on refuge issues and updates via modern technology such as text messages, podcasts, and smartphone applications</p> <p>Work with birding clubs to disseminate refuge information and retrieve any sighting information from such clubs</p>	<p>Provide and maintain refuge informational displays at other frequently visited refuge partner locations</p> <p><i>Within 7 years of CCP implementation:</i></p> <p>Deliver refuge information through select video clips or live-streaming, real-time wireless wildlife camera images</p> <p>Develop tools to conduct outreach on refuge issues and updates via modern technology such as text messages, virtual tours, podcasts, and smartphone applications</p>
<p>Community Support</p>	<p>Objective A3.2: Increase community support by fostering further growth of the Friends of Monomoy and increase volunteer hours by 150 hours a year for the next 10 years.</p> <p><i>Continue to:</i></p> <p>Recruit, train, and guide volunteer efforts on the refuge</p> <p>Maintain a productive relationship with the Friends of Monomoy NWR group that understands the refuge mission and actively supports refuge activities</p> <p>Implement current Friends and volunteer policies according to Draft Friends Policy 633 FW 1-4 and National Wildlife Refuge System Volunteer and Partnership Enhancement Act of 1998 October 5</p> <p>Maintain a volunteer database</p> <p>Encourage establishing a local chapter of the American Lighthouse Foundation to support future maintenance and conduct interpretation at the historic Monomoy Point Light Station</p>	<p>Objective B3.2: Over the life of the plan, support the Friends group, increase refuge partnerships, volunteers, and other forms of support to improve refuge communications and effectiveness and have the public understand our purpose and management activities by increasing volunteer hours and the number of partnerships by 50 percent.</p> <p><i>In addition to objective A3.2:</i></p> <p><i>Within 2 years of CCP implementation:</i></p> <p>Develop and implement volunteer position descriptions to increase volunteer opportunities</p> <p><i>Within 10 years of CCP implementation:</i></p> <p>Collaborate with the Friends of Monomoy to create a jointly staffed visitor contact facility in Chatham or Harwich that allows visitors to: (1) receive information on what nature-based opportunities are available in the local area; (2) know where to go; and (3) make whatever arrangements and contacts needed for their visit</p>	<p>Objective C3.2: Over the life of the plan, develop new and enhance existing partnerships, support a reinvigorated Friends group, increase refuge partnerships, volunteers, and other forms of support to improve refuge communications and effectiveness, improve our ability to achieve the refuge mission, and have the public understand our purpose and management activities by increasing volunteer hours and the number of partnerships by 50 percent.</p> <p><i>In addition to objective A3.2:</i></p> <p><i>Within 2 years of CCP implementation:</i></p> <p>Develop and implement volunteer position descriptions to increase volunteer opportunities</p> <p>Work with partners to promote and educate about what it means to visit a wilderness area and the important role it plays in preserving the quality of life in the Cape Cod region</p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 4: Ensure that the spirit and character of the Monomoy Wilderness are preserved.</p> <p><i>Responds to Issues: How will the refuge manage its wilderness resources in keeping with the Wilderness Act? Will there be a change in the areas designated as wilderness?</i></p> <p>Wilderness Implementation and Designation</p>	<p>Objective A4.1: Manage the Monomoy Wilderness to preserve wilderness character and values, in a manner consistent with refuge establishment purposes (migratory birds and endangered species recovery) and the Refuge System mission.</p> <p><i>Continue to:</i></p> <p>Manage the existing Monomoy Wilderness for naturalness, wildness, and outstanding opportunities for solitude or primitive and unconfined recreation by conducting refuge management operations and visitor uses in a manner that protects wilderness character</p> <p>Continue managing the Inward Point and Powder Hole inventory areas to maintain or enhance their size, naturalness, and opportunities for solitude or primitive and unconfined recreation throughout the 15-year plan period, to the extent that it will not prevent fulfilling refuge establishment purposes or the Refuge System mission (610 FW)</p> <p>Use the appropriate response to unplanned wildfire ignitions that provides for public and firefighter safety while recognizing periodic fire as a natural process with long-term benefits to an enduring wilderness resource</p> <p>Where fire exclusion or other man-caused alterations of natural coastal processes have led to unnatural wildland fuel and vegetation conditions, apply prescribed fire to restore a more natural fire regime or migratory bird or endangered/threatened species habitat conditions within the Monomoy Wilderness</p> <p>Maintain wilderness boundary signs at three locations (two boat landings and on Nauset/South Beach)</p> <p>Implement management activities that involve temporary rather than permanent uses or site occupancy which create no new surface disturbance, do not involve placement of permanent structures or installations (e.g., temporary symbolic fencing) or use of motorized equipment or mechanized transport unless it is the minimum tool possible</p>	<p>Objective B4.1: Manage the Monomoy Wilderness to enhance its wilderness character and values, in a manner consistent with refuge establishment purposes (migratory birds and endangered species recovery) and the Refuge System mission.</p> <p><i>In addition to objective A4.1, strategies 1 to 6:</i></p> <p><i>Continue to:</i></p> <p><i>Within 2 years of CCP implementation:</i></p> <p>Create and post an additional wilderness information station or kiosk at the Monomoy Point Light Station</p> <p>Create additional materials, offer public programs and distribute information about wilderness to target audiences to raise awareness of wilderness designation and wilderness ethics</p> <p><i>Within 3 years of CCP implementation:</i></p> <p>Complete a wilderness stewardship plan for the Monomoy Wilderness; establish thresholds of acceptable change to resources resulting from public use; develop monitoring strategies to measure change, measure achievement of objectives, and to evaluate visitor experiences</p> <p>Work with the Federal Aeronautical Administration to increase pilot awareness of the 2,000-foot flight ceiling restriction over Monomoy wilderness.</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Explore opportunities with Arthur Carhart Center to recruit a wilderness ranger and develop programs that promote Wilderness Act principles such as wilderness education workshops for local/regional educators</p>	<p>Objective C4.1: Manage the Monomoy Wilderness to enhance its wilderness character and values, in a manner consistent with refuge establishment purposes (migratory birds and endangered species recovery) and the Refuge System mission.</p> <p><i>In addition to objective A4.1, strategies 1 to 3 and 6:</i></p> <p><i>Continue to:</i></p> <p>Assess current wilderness character (untrammeled; undeveloped; natural; outstanding opportunities for solitude or primitive and unconfined recreation; and other features/unique attributes) within the Monomoy Wilderness and implement the wilderness monitoring component of a wilderness stewardship plan for the Monomoy Wilderness</p> <p><i>Within 1 year of CCP implementation:</i></p> <p>Decrease the use of boats to transport refuge staff to North Monomoy Island and South Monomoy by requiring staff and volunteers to paddle or hike to their work locations when feasible</p> <p>Remove all signs within the Monomoy Wilderness and utilize the kiosk on Morris Island to inform visitors about the Monomoy Wilderness (e.g., allowed uses, boundary, etc.)</p> <p><i>Within 3 years of CCP implementation:</i></p> <p>Complete a wilderness stewardship plan for the Monomoy Wilderness 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; limit or restrict access through use of a wilderness access pass or adapt management strategies as warranted</p> <p>Explore opportunities with Arthur Carhart Center to recruit a wilderness ranger and develop programs that promote Wilderness Act principles such as wilderness education workshops for local/regional educators</p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
Refuge Goal 4: Ensure that the spirit and character of the Monomoy Wilderness are preserved.	<i>How will the refuge manage its wilderness resources in keeping with the Wilderness Act? Will there be a change in the areas designated as wilderness?</i>		
<i>Responds to Issues:</i>			
Wilderness Implementation and Designation (cont.)	<p>Provide refuge staff with wilderness stewardship training appropriate for their position</p> <p>Review all activities proposed within the Monomoy Wilderness and the Inward Point and Powder Hole inventory areas, and ensure they are consistent with wilderness management using the Minimum Requirements Analysis process presented under Actions Common to All Alternatives</p> <p>Review and implement actions recommended in the Wilderness Character Report (untrammeled; undeveloped; natural; outstanding opportunities for solitude or primitive and unconfined recreation; and other features/unique attributes) within the Monomoy Wilderness</p>	<p>Explore the feasibility of a wilderness access pass and implement if practicable the minimum access program as a means of educating and informing the public about the wilderness-designated lands and waters on the refuge, and appropriate use by visitors while in refuge wilderness, as well as limiting the number of people allowed at one time in an effort to maintain the solitude character of the Monomoy Wilderness</p> <p>Explore the option of creating a smartphone application with Monomoy Wilderness coordinates and information about the wilderness designation</p>	<p>Explore the feasibility of a wilderness access pass and implement if practicable the minimum access program as a means of educating and informing the public about the wilderness-designated lands and waters on the refuge, refuge wildlife and management actions, and appropriate use by visitors while in refuge wilderness, as well as limiting the number of people allowed at one time in an effort to maintain the solitude character of the Monomoy Wilderness</p> <p>Explore the option of creating a smartphone application with Monomoy Wilderness coordinates and information about the wilderness designation</p> <p>Work with the Federal Aeronautical Administration to increase pilot awareness of the 2,000-foot flight ceiling restriction over Monomoy wilderness.</p>
Refuge Goal 5: Protect cultural resources that exist in the refuge.			
<i>Responds to Issues:</i>			
Archaeological Resources and Historic Structures	<p>Objective A5.1: Protect and preserve archaeological, Native American, and historical resources on Monomoy NWR from ground-disturbing activities or processes, and artifact looting. Maintain the Monomoy Point Light Station (listed on the National Register of Historic Places) to meet the historic preservation standards of the Secretary of the Department of the Interior.</p> <p><i>Continue to:</i></p> <p>Comply with section 106 of NHPA prior to conducting any ground disturbing activities on the refuge. Compliance may entail any combination of SHPO/THPO consultation, literature survey, or field survey</p> <p>Identify, evaluate, and conduct archaeological evaluations, with subsurface testing as necessary, for any project where ground-altering activity is proposed</p> <p>Enforce all Federal cultural resource protection laws and regulations including the necessary provisions of ARPA to protect cultural resources on the refuge</p> <p>Conduct structural and basic maintenance on the Monomoy Point Light Station to comply with historic preservation standards</p>	<p>Objective B5.1: Prevent the loss of cultural resources on Monomoy NWR when possible over the next 15 years, in keeping with the Service's legal responsibility (under sections 106 and 110 of NHPA) to identify, evaluate and preserve all cultural resources and historic properties on the refuge. To the extent that it is prudent and feasible within the context of projected sea level rise and climate change, protect and preserve Native American and historical archaeological resources on Monomoy NWR that are threatened by coastal erosion. Protect and preserve significant archaeological resources that are threatened by proposed ground-disturbing activities, or are subject to potential artifact looting. Maintain the Monomoy Point Light Station (listed on the National Register of Historic Places) to meet the historic preservation standards of the Secretary of the Department of the Interior.</p> <p><i>In addition to objective A5.1, strategies 1 to 5: Within 1 year of CCP implementation:</i></p> <p>Develop a MOA collaboratively with the State Historic Preservation Officer and Advisory Council on Historic Preservation which identifies the steps the Service will take to systematically reduce, avoid, or mitigate the adverse effects from natural weathering, erosion and decay processes on the Monomoy Point Light Station structures and associated archaeological structures</p>	<p>Objective C5.1: To the extent that it is prudent and feasible within the context of projected sea level rise and climate change, protect and preserve Native American and historical archaeological resources on Monomoy NWR that are threatened by coastal erosion. Protect and preserve significant archaeological resources that are threatened by proposed ground disturbing activities or sea level rise damage, or are subject to potential artifact looting.</p> <p>Manage the Monomoy Point Light Station (listed on the National Register of Historic Places) to meet the historic preservation standards of the Secretary of the Department of the Interior, to the extent that is prudent and feasible given the long-term threat to the structures posed by erosion and climate change.</p> <p><i>In addition to objective A5.1, strategies 1, 3, and 5: Within 1 year of CCP implementation:</i></p> <p>Develop a MOA collaboratively with the State Historic Preservation Officer and Advisory Council on Historic Preservation which identifies the steps the Service will take to systematically reduce, avoid, or mitigate the adverse effects from natural weathering, erosion and decay processes on the Monomoy Point Light Station structures and associated archaeological structures</p> <p>Identify, evaluate, or survey cultural resources on the refuge, on a project-specific basis</p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 15: Protect cultural resources that exist in the refuge.</p>	<p>Responds to issues: How will the refuge manage its cultural resources? What will happen to the light station?</p>		
<p>Archaeological Resources and Historic Structures (cont.)</p>	<p>Develop and implement throughout the plan period, a historic site management plan for the Monomoy Point Light Station structures and associated archaeological structures following NHPA sections 106 and 110 and 36 CFR Part 800 collaborative procedures that provides for systematic mitigation over time of the adverse effects from natural weathering, erosion and decay processes</p>	<p>Update the 2010 MRA that addresses the need for periodic motorized equipment access through the Monomoy Wilderness to the Monomoy Point Light Station for the purposes of major repairs or refurbishment</p> <p>Establish a protocol with the Massachusetts Board of Underwater Archaeological Resources for examination and assessment of historic shipwreck remains that may appear</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Develop a cultural resource management plan for the archaeological sites and historic structures on the refuge which includes periodic monitoring of known archaeological sites</p> <p>In accordance with NHPA (section 110), conduct proactive archaeological surveys to determine the limits and integrity of the Whitewash Village archaeological site group on South Monomoy, and to assess the conditions of known Native American sites on Morris Island</p> <p>Establish a law enforcement protocol for any unexpected discovery of human remains due to erosion</p> <p><i>Within 10 years of CCP implementation:</i></p> <p>Once interior construction within the building is complete, allow public use during daylight hours of the Monomoy Point Light Station (interpretive signs, day and virtual tours, etc.) to support the interest of the public in this nationally significant historic resource</p>	<p><i>Within 5 years of CCP implementation:</i></p> <p>Establish a protocol with the Massachusetts Board of Underwater Archaeological Resources for examination and assessment of historic shipwreck remains that may appear</p> <p><i>Within 10 years of CCP implementation:</i></p> <p>Develop a mitigation plan for the Monomoy Point Light Station, to implement an interpretive program of exhibits, documentary research, archaeological investigation, and possible relocation of structures, prior to the destruction of this National Register site by natural forces</p>

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Management of Habitat and Public Uses	Alternative C: Natural Processes
<p>Refuge Goal 16: Develop and maintain a diverse and inclusive workplace with sufficient resources, including infrastructure and equipment, to work productively toward fulfilling the refuge mission.</p> <p><i>Responds to Issues: how will the refuge continue to staff the refuge? What types of facility and infrastructure changes will be made, if any?</i></p>			
<p>Staffing</p>	<p>Objective A6.1: Maintain current staffing levels at three full time employees (refuge manager and two biologists), and continue to employ seasonal and term biological staff and interns (see appendix G for current staffing chart). Provide a diverse and inclusive workplace through annual training, support, and awareness.</p> <p><i>Continue to:</i></p> <ul style="list-style-type: none"> Recruit and employ seasonal and term biological, visitor services, and wilderness staff, interns, and volunteers Work with organizations such as the Student Conservation Association and the Federal Pathways program to hire talented young college students for seasonal intern positions Provide a safe environment at work that promotes diversity and inclusion Seek grants and funding partnerships to support additional staff Request additional staffing as funding becomes available Provide relevant staff training opportunities to increase work skills and to increase understanding of diversity and inclusion 	<p>Objective B6.1: Over the next 15 years, fill seven additional permanent full-time positions and continue to employ seasonal and term biological staff and interns to implement the activities outlined in alternative B (see appendix G for staffing chart proposed under alternative B). Provide a diverse and inclusive workplace through annual training, support, and awareness.</p> <p><i>In addition to objective A6.1:</i></p> <p><i>Within 15 years of CCP implementation:</i></p> <ul style="list-style-type: none"> Change an existing General Biologist (GS-0401-09) to a Wildlife Refuge Specialist (GS-0401-09/11) position Fill one Visitor Services Manager position Fill one Visitor Services Specialist Fill one Maintenance Worker/Boat Operator position Fill one Administrative Assistant position Fill two Park Ranger-Law Enforcement positions Fill one Biological Science Technician position 	<p>Objective C6.1: Over the next 15 years, fill six additional permanent full-time positions to implement the activities outlined in alternative C (see appendix G for proposed staffing chart under alternative C). Provide a diverse and inclusive workplace through annual training, support, and awareness.</p> <p><i>In addition to objective A6.1:</i></p> <p><i>Within 15 years of CCP implementation:</i></p> <ul style="list-style-type: none"> Fill one Visitor Services Specialist position Fill one Maintenance Worker/Boat Operator position Fill one Administrative Assistant position Fill two Park Ranger-Law Enforcement positions Fill one Refuge Operations Specialist position

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<p>Facilities & Maintenance (cont.)</p>		<p><i>Within 10 years of CCP implementation:</i></p> <p>Conduct a cost-benefit analysis to evaluate (1) establishment of a stand-alone visitor contact station that supports refuge visitor services staff, (2) renovation of existing facilities through remodeling of current headquarters/visitor contact station and dormitory/maintenance building to provide additional office and living space with or without the establishment of a separate visitor contact station, or (3) acquisition of a new headquarters site and funding to relocate the entire refuge operation (including visitor contact station) and shuttle parking. This would include exploring opportunities to co-locate with existing or future refuge partners.</p> <p>If cost effective, establish a visitor contact station in Chatham or Harwich (utilizing existing Service standard designs) that accommodates sufficient parking space, workshop space, meeting room, staff and Friends offices, and welcome area, which would include parking and shuttle service to Morris Island</p> <p>If a new visitor contact station is established in Chatham or Harwich, convert the existing headquarters/visitor contact station to support only administrative functions, while maintaining the ability to provide information to visitors who come to Morris Island</p> <p>Until a visitor contact station is established off Morris Island, support the Friends of Monomoy with their efforts to establish store in downtown Chatham or Harwich that would also provide refuge information; this building would not support refuge visitor services staff</p>	<p>Explore opportunities to acquire the waterfront Stage Island lot adjoining our current Lot 7b; add storage capability and expand parking for refuge staff</p> <p>Explore opportunities to partner with Town of Chatham or U.S. Coast Guard and establish new dockage and covered boat storage and maintenance with secure marine equipment storage and additional parking</p> <p><i>Within 10 years of CCP implementation:</i></p> <p>Explore the acquisition of alternative headquarters site, which would include parking and shuttle to Morris Island, where entire refuge operation can be relocated (including visitor contact station); this would include exploration of possibilities to co-locate with partners</p>

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<p>Energy Efficiency (cont.)</p>		<p><i>Within 3 years of CCP implementation:</i></p> <p>Conduct a cost-benefit analysis to determine the most efficient source of alternative energy at the Monomoy Point Light Station and seek funding for installation</p> <p>Pursue improvements to preserve the Monomoy Point Light Station structures to extend maintenance intervals, and make it more functional, including the construction of internal walls and the installation of drywall to provide privacy to refuge staff stationed there when doing field work on South Monomoy</p> <p>Use the CLIR (Climate Leadership in Refuges) tool to calculate refuge greenhouse gas emissions, and develop and implement actions to reduce the release of these gases from refuge operations</p> <p><i>Within 5 years of CCP implementation:</i></p> <p>Prepare a stand-alone NEPA analysis for the installation of a wind turbine to augment the solar thermal tube domestic hot water system installed in 2011 for the refuge headquarters complex on Morris Island</p> <p><i>Within 10 years of CCP implementation:</i></p> <p>Install a wind turbine to augment the solar thermal tube domestic hot water system installed in 2011 for the refuge headquarters complex on Morris Island</p> <p>Install electric car charging station at Morris Island parking lot</p>	