



U.S. Fish and Wildlife Service

Mashpee National Wildlife Refuge

Hunting Plan

August 2019



Appendix A - Compatibility Determination

Appendix B - Environmental Assessment,

and Finding of No Significant Impact

Appendix C - Intra-Service Section 7 Evaluation

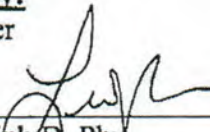
Mashpee National Wildlife Refuge Hunting Plan

August 2019

U.S. Fish and Wildlife Service

Mashpee National Wildlife Refuge
73 Weir Hill Road
Sudbury, MA 01776

Submitted By:
Project Leader

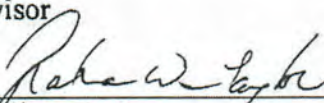


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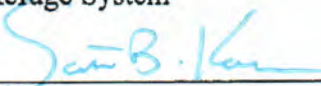


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Hunting Plan

MASHPEE NATIONAL WILDLIFE REFUGE HUNTING PLAN

I. INTRODUCTION

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (Refuge System), the purposes of an individual refuge, U.S. Fish and Wildlife Service (Service) policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations and Fish and Wildlife Service Manual.

The Service acquired the land for the Mashpee National Wildlife Refuge (NWR, refuge) in 1995 “for the development, advancement, management, conservation, and protection of fish and wildlife resources ...” 16 U.S.C. § 742 f(a)(4) “and to preserve and protect natural resources associated with the Waquoit Bay area for the protection of waterfowl and wildlife.” Mashpee NWR owns a small portion of the lands within the approved acquisition boundary; however, a large percentage is owned by other agencies (Federal, Tribal, State, and non-governmental organizations) that work in partnership with refuge to staff to help conserve and protect the area’s fish, wildlife, and habitat (Figure 1). The Refuge, situated in Mashpee and Falmouth on Cape Cod Massachusetts, has an approved acquisition boundary of 5,871 acres. Currently, 292.87 acres are in Service ownership (Figure 2), which includes the Bufflehead Bay parcel (284.4 acres), the Conboy parcel (5.5 acres), and a very small parcel (3.0 acres) located on Seconsett Island. This small parcel will not be considered for opening due to its size and location. The Service also holds a conservation easement on 54 acres on Town of Mashpee land near the Mashpee High School that will not be considered for opening up to hunting. Since a large portion of the proposed lands have already been protected by other partners, it is likely that the Service will only own a small percentage of land in fee title. Through this partnership, the refuge protects and enhances biological diversity, restores native habitats, protects water quality and support species of conservation concern. The refuge partnership manages a variety of habitats including pitch-pine scrub oak barrens, Atlantic white cedar swamps, coastal ecosystems, coldwater streams, salt marsh, freshwater wetlands, ponds, and vernal pools.

Upon its original establishment, a Memorandum of Understanding (MOU) was created to outline the collaborative nature of the acquisition, protection and management of these lands. During the partner scoping process there was a shared concern for the renewal and update of that MOU and a desire to improve the coordination of resources to effectively manage the refuge. The Mashpee Partnership MOU was updated and signed by all original partners, with the exception of the Mashpee Wampanoag Tribal Council, in 2016. Partners on the MOU include: Massachusetts Department of Fish and Wildlife (MassWildlife), Massachusetts Department of Conservation and Recreation (DCR), (Waquoit Bay National Estuarine Research Reserve (WBNERR)), Falmouth Rod and Gun Club, Town of Falmouth, Town of Mashpee, Orenda Wildlife Land Trust and the Friends of Mashpee. Mashpee NWR is one of eight refuges that comprise the Eastern Massachusetts NWR Complex (Refuge Complex), which is headquartered in Sudbury, Massachusetts.

The mission of the Refuge System, as outlined by the National Wildlife Refuge System Administration Act (NWRSA), as amended by the National Wildlife Refuge System Improvement Act (16 U.S.C. 668dd et seq.), is to:

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

The NWRSA mandates the Secretary of the Interior in administering the Refuge System to (16 U.S.C. 668dd(a)(4):

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the Refuge System;
- Ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained for the benefit of present and future generations of Americans;
- Ensure that the mission of the Refuge System described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out;
- Ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the States in which the units of the Refuge System are located;
- Assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the Refuge System and the purposes of each refuge;
- Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the Refuge System through which the American public can develop an appreciation for fish and wildlife;
- Ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses; and
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

Therefore, it is a priority of the Service to provide for wildlife-dependent recreation opportunities, including hunting and fishing, when those opportunities are compatible with the purposes for which the refuge was established and the mission of the Refuge System.

The refuge is officially closed to all public uses. However, due to its close proximity to partner lands that are available to a variety of public use activities, Service-owned lands do experience a certain level of use in the form of hikers, bike riders, and hunters as well as less desirable uses such as vehicle and all-terrain vehicles (ATV) operation.

Some lands within the refuge approved acquisition boundaries owned by partners including Mass Wildlife, DCR, Falmouth Rod and Gun Club, and the town of Mashpee are open to hunting and fishing in designated areas following State hunting and fishing regulations.

II. STATEMENT OF OBJECTIVES

The objectives of the hunting program on Mashpee NWR are to:

1. Provide the public with a high-quality recreational experience on refuge lands and increase opportunities and access for hunters;

2. Implement a hunting program that is safe for all refuge users;
3. Design a hunting program that is administratively efficient and manageable with existing staffing levels; and,
4. Design a hunting program that is in alignment with refuge habitat management objectives.

III. DESCRIPTION OF HUNTING PROGRAM

A. Areas to be Opened to Hunting

Approximately 290 acres of the refuge will be opened to hunting in accordance with applicable State and Federal regulations as published annually by the Massachusetts Division of Fish and Wildlife, unless otherwise noted. This area consists of two parcels, one in Mashpee, Massachusetts, and the other in Falmouth, Massachusetts. The largest of the parcels, located in Mashpee, is 284.4 acres, and is known locally as the Bufflehead Bay parcel (Figure 4). The second parcel, known locally as the Conboy property, is a 5.5 acre parcel located in the town of Falmouth (Figure 5).

The refuge is dominated by pitch pine-mixed oak woodlands. Other less dominant habitats consists of red maple swamps, scrub shrub wetlands, emergent saltmarsh and vernal pools.

Figure 1. Map of Mashpee NWR along with the Approved Acquisition Boundary

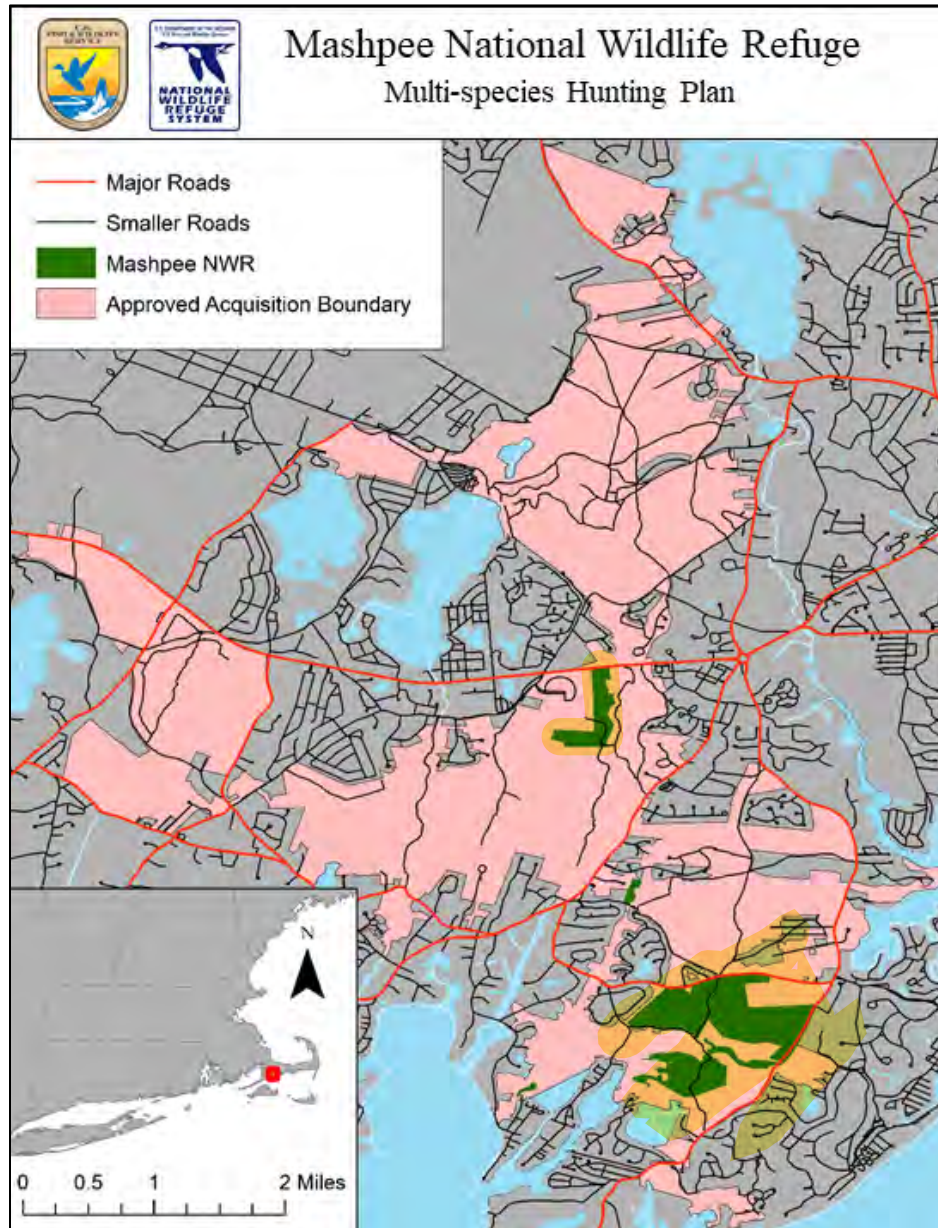


Figure 2. Map of Mashpee NWR

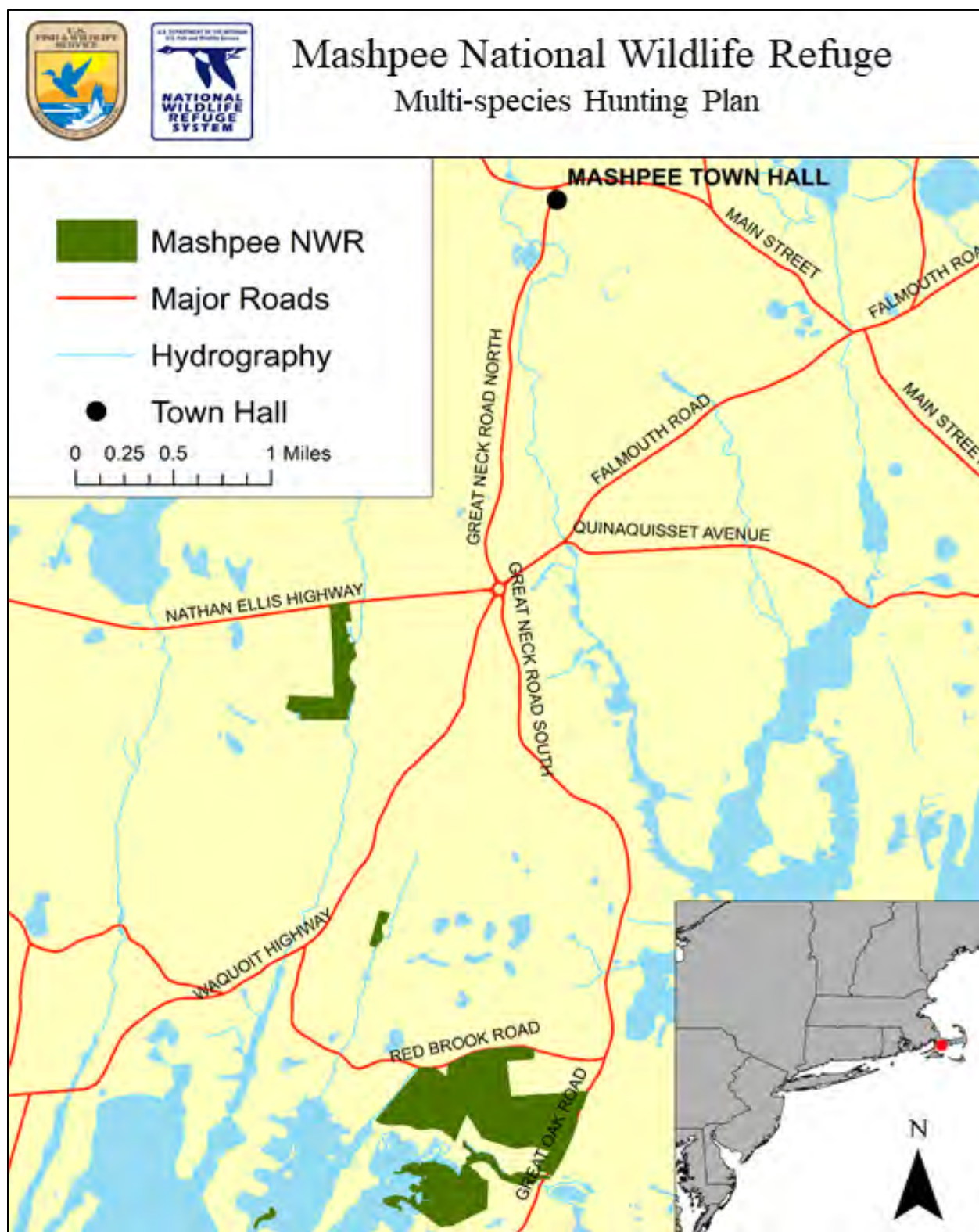


Figure 3. Map of Mashpee NWR Hunting Areas

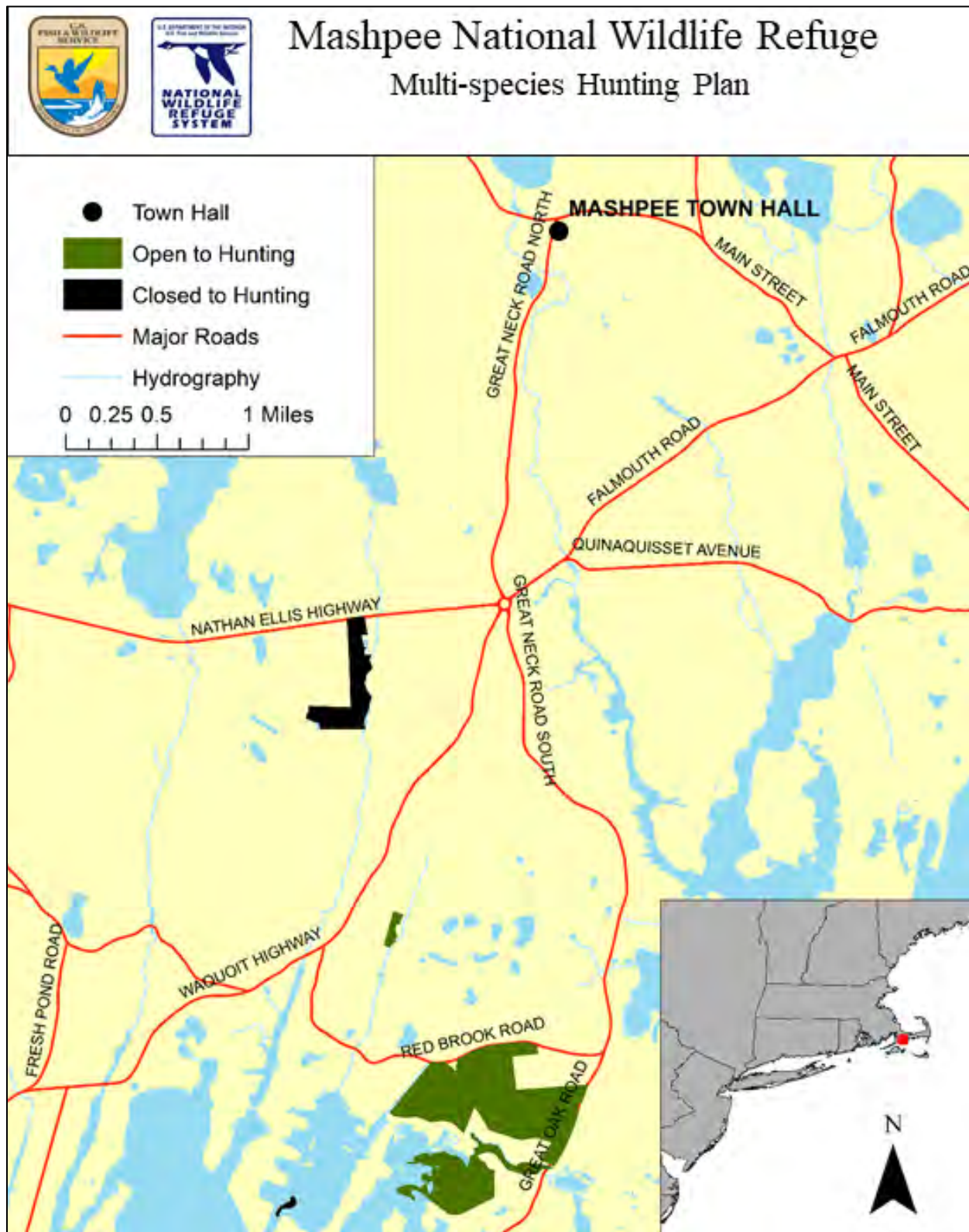


Figure 4. Map of the Bufflehead Bay Parcel on Mashpee NWR

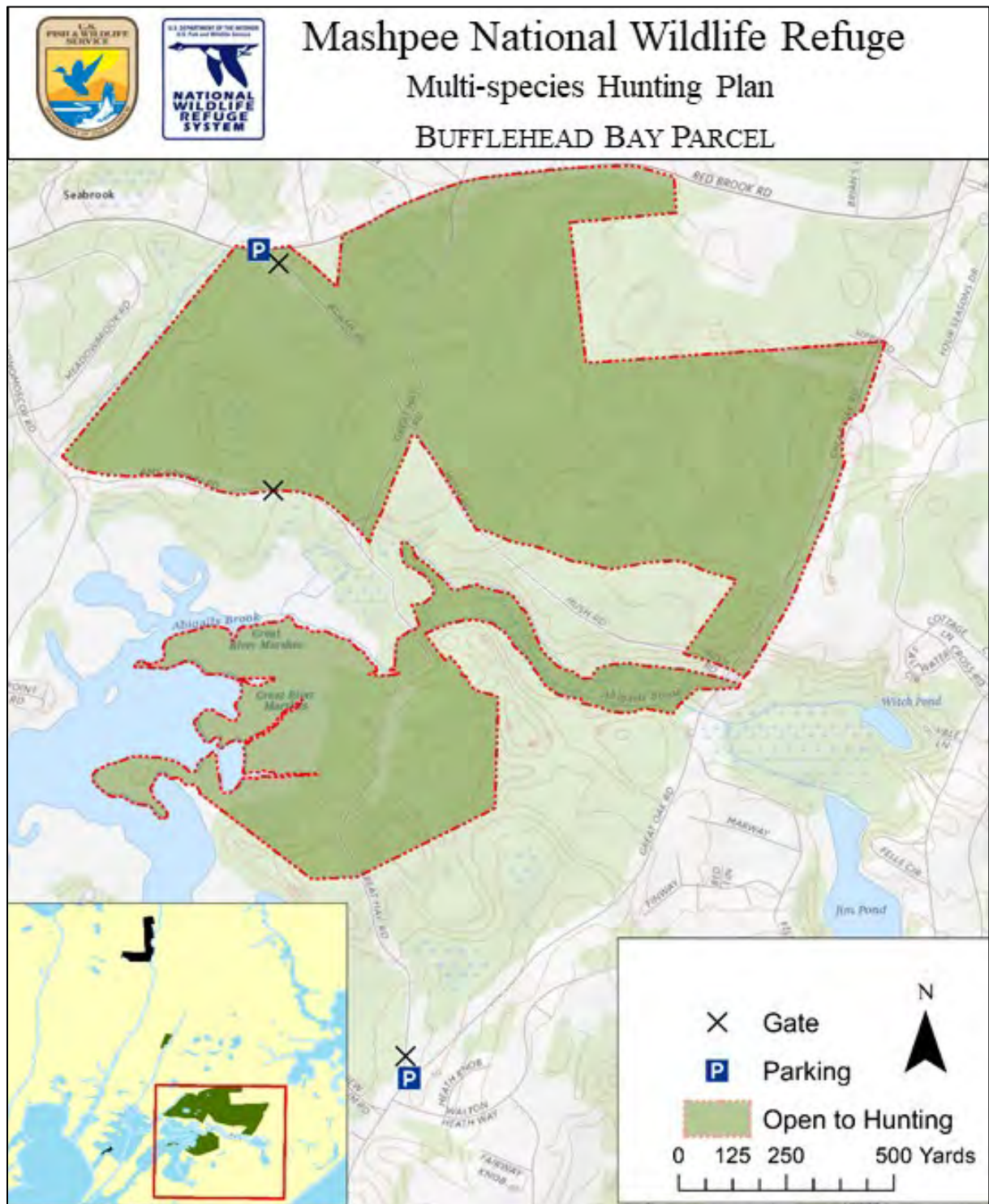
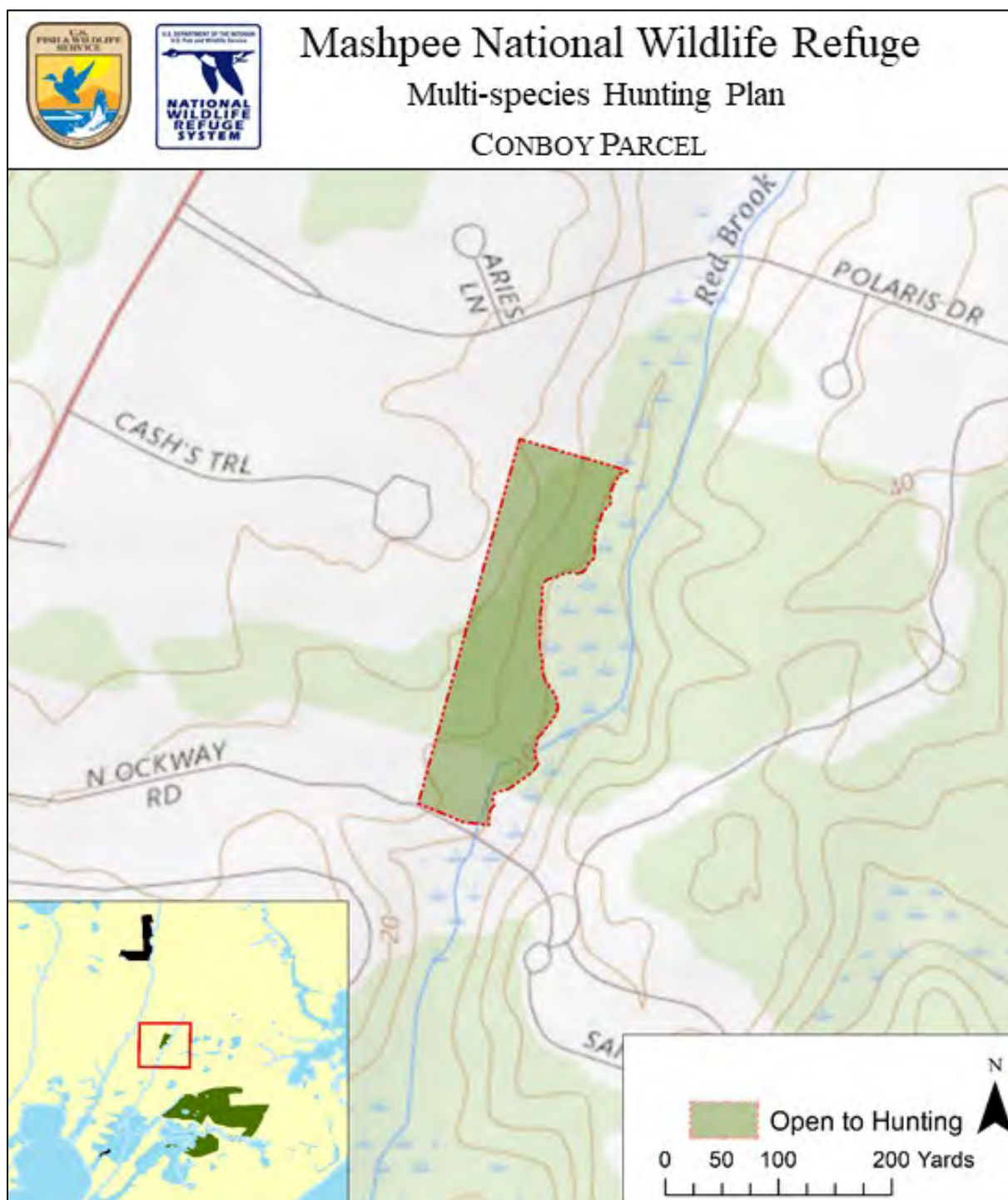


Figure 5. Map of the Conboy Parcel on Mashpee NWR



B. Species to be Taken, Hunting Periods, Hunting Access

Big Game Hunting

- White-tailed deer
- Wild turkey

White-tailed deer and wild turkey may be hunted on the Bufflehead Bay and Conboy parcels in accordance with specific State regulations. Hunters will self-navigate to their location.

Small Game Hunting

- Squirrel

Small game (with the exception of rabbit) may be hunted on the Bufflehead Bay and Conboy parcels in accordance with specific State regulations. No rabbit hunting is permitted due to the presence of New England Cottontails, a species of conservation concern. Hunters will self-navigate to their location.

Upland Game Bird Hunting

- Pheasant
- Quail
- Ruffed grouse
- Crow

Upland game birds may be hunted on the Bufflehead Bay and Conboy parcels in accordance with specific State regulations. Hunters will self-navigate to their location.

Migratory Game Bird Hunting

- Sora rail
- Virginia rail
- Wilson's snipe
- Ducks
- Geese
- American coot
- American woodcock

The species listed above may be hunted in accordance with State regulations on the Bufflehead Bay and Conboy parcels of the refuge. Hunters will self-navigate to their location.

Furbearer

- Coyote
- Fox
- Raccoon
- Opossum

The Bufflehead Bay and the Conboy parcels of the refuge will be open to furbearer hunting in accordance with State regulations (with the exception of night hunting). Hunters will self-navigate to their location.

C. Hunter Permit Requirements

No refuge permits will be required for any hunting.

D. Consultation and Coordination with the State

National wildlife refuges, including Mashpee NWR, conduct hunting programs within the framework of State and Federal regulations. The EA (appendix B) associated with this hunting plan and the preferred alternative discussed in that document, will be shared with the Massachusetts Division of Fisheries and Wildlife (MassWildlife). The refuge has moved forward with developing this hunting plan based upon earlier formal coordination with the MassWildlife as well as the intervening informal discussions.

The Refuge Complex staff will continue to consult and coordinate to maintain regulations and programs that are consistent with the State, as well as to monitor populations of proposed hunt species and to set harvest goals. We will work together to ensure safe and enjoyable recreational hunting opportunities; with law enforcement officers from both agencies working together to conduct patrols, safeguard hunters and visitors, and protect both game and nongame species.

Coordination with MassWildlife regarding hunting on the refuge dates back to 2014 during the drafting of the Mashpee Comprehensive Conservation Plan (CCP). Over the past few years, much of the communication and coordination with the State has been through Regional leadership staff and has focused on increasing hunting and fishing opportunities on all Service lands within the Commonwealth.

The refuge reviewed the operations and regulations for neighboring State wildlife management areas to find consistency where possible. The refuge first reached out to the State (District Supervisor Jason Zimmer) in 2014 to discuss this hunting plan, and worked with the local State biologist and conservation officers early in development of the plan. We asked for review by the State regional office that covers our area to help adjust our plan to align, where possible, with State management goals. The State regional office reviewed and concurred with the refuge-specific regulations. We will continue to consult and coordinate on specific aspects of the hunting plan. The State is in agreement with the refuge's hunting plan, as it will help meet State objectives. Mashpee NWR will continue to work together to ensure safe and enjoyable recreational hunting opportunities.

E. Law Enforcement

The enforcement of refuge and State hunting regulations, trespass, and other public use violations normally associated with management of a national wildlife refuge is the responsibility of refuge law enforcement officers. These officers cooperate with, and are assisted by, State and local police officers as well as State Environmental Protection Officers (EPOs).

During the hunting seasons, the refuge will be patrolled by refuge law enforcement officers and EPOs. The frequency of patrols will be determined by hunter use, the level of compliance observed during patrols, and information obtained from participants, and other sources. If

required, hunters will be checked in the field for compliance with regulations. Refuge brochures and increased signage will emphasize refuge-specific regulations, safety considerations, and the protection of wildlife species found on the refuge. Regulations and maps will be posted on the Mashpee NWR website (<https://www.fws.gov/refuge/mashpee>), on signs at the refuge entrance, and will be available at the Refuge Complex headquarters and at Monomoy NWR office. Refuge boundaries and hunt area boundaries will be clearly posted.

F. Funding and Staffing Requirements

Annual hunting administration costs for Mashpee NWR, including salary, equipment, law enforcement, maintenance of sites, and communication with the public will be approximately \$12,450 annually and \$59,500 for the first year due to the need for infrastructure and signage improvements. Refuge staff are funded from the Refuge Complex's operational budget to support the hunting program. Costs associated with updating signage and maintaining access will be funded by the annual operating budget as well (visitor services and/or maintenance funds, as appropriate).

Table 1. Initial Costs of Hunting Programs at Mashpee NWR

Activity	Material Costs	Labor Costs	Total
Document Preparation / Administration	\$3,000	\$15,000	\$18,000
Parking lot construction	\$5,000	\$3,500	\$8,500
Gate installation	\$4,000	\$2,500	\$6,500
Posting/Signs	\$12,000	\$4,000	\$16,000
Outreach	\$1,500	\$3,000	\$4,500
Law Enforcement	\$1,500	\$4,500	\$6,000
Totals	\$27,000	\$32,500	\$59,500

Table 2. Annual Costs of Hunting Programs at Mashpee NWR

Activity	Material Costs	Labor Costs	Total
Document Preparation / Administration	\$750	\$2,200	\$2,950
Parking lot maintenance	\$500	\$400	\$900
Outreach	\$500	\$1,600	\$2,100
Law Enforcement	\$1,500	\$5,000	\$6,500
Totals	\$3,250	\$9,200	\$12,450

IV. CONDUCT OF THE HUNTING PROGRAM

A. Hunter Permit Application, Selection, and Registration Procedures

The refuge will administer the hunting program according to State and Federal regulations, with the exception of a few refuge-specific regulations noted below. However, the refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations up to the limit of State regulations. The refuge may restrict hunting if it becomes inconsistent with other, higher priority refuge programs or endangers refuge resources or public safety.

Since Service-owned land is surrounded by partner lands that are open to hunting without special permission or permitting, we feel it is not necessary to require hunters to obtain special permits to hunt the Service-owned lands. Although we will implement several specific regulations that differ from surrounding lands, they are not significant enough to warrant implementation of a permit system. Refuge-specific hunting regulations and hunting unit maps (brochures) will be made available to hunters at kiosks, the refuge website and at the Refuge Complex Headquarters in Sudbury, Massachusetts.

B. Refuge-Specific Regulations

Listed below are refuge-specific regulations that pertain to hunting on Mashpee NWR as of the date of this plan. These regulations may be modified as conditions change or if refuge expansion continues/occurs. To ensure compatibility with refuge purposes and the mission of the Refuge System, hunting must be conducted in accordance with State and Federal regulations, as supplemented by refuge-specific regulations (50 CFR, Chapter 1, subchapter C). Refuge-specific stipulations are also detailed in the hunting Compatibility Determination (appendix A).

- Refuge lands are closed to night hunting. Refuge hunting hours are one-half hour before sunrise to one-half hour after sunset.
- We allow the use of dogs to retrieve game.

C. Relevant State Regulations

Hunters are responsible for knowing and complying with all Massachusetts regulations.

V. PUBLIC ENGAGEMENT

A. Outreach for Announcing and Publicizing the Hunting Program

The refuge maintains a mailing list, for news release purposes, to local newspapers, radio, and websites. Special announcements and articles may be released in conjunction with hunting seasons. In addition, information about hunting on the refuge will be available at the Refuge Complex headquarters and on the Mashpee NWR website.

Refuge staff will work directly with partners, especially, MassWildlife, to publicize the opening of this hunting program.

B. Anticipated Public Reaction to the Hunting Program

During the initial public scoping process for the draft Mashpee CCP, there was little discussion regarding opening the refuge to hunting specifically, as it was neither an issue brought up by stakeholders at the time of scoping nor a priority of the Service. It was not until after scoping and further into the development of the draft CCP that the Commonwealth of Massachusetts began to express their opinions regarding opening up Mashpee and other complexed refuges to hunting. There was however, concern expressed by the Commonwealth regarding the potential lack of access imposed by the Service during the establishment of the refuge. Therefore, during the CCP scoping and other planning processes, the greater emphasis was placed on simply opening up Mashpee NWR to other recreational activities, such as hiking, wildlife observation, photography, interpretation and environmental education. Since its establishment in 1995, no efforts were made to “open” the refuge until the development of the draft CCP in 2014.

Due to the fact that much of the surrounding land is currently open to hunting per state seasons and regulations, it is not anticipated that there will be much opposition to this program. However, one of the driving forces for the protection of the refuge owned Bufflehead Bay parcel was to protect waterfowl habitat, specifically for American black duck, so there may be some concerns and opposition to opening up the refuge to waterfowl hunting.

C. How the Public Will Be Informed of Relevant Rules and Regulations

General information regarding hunting can be obtained at Refuge Complex headquarters at 73 Weir Hill Rd, Sudbury, MA, 01776, and at Monomoy National Wildlife Refuge at 30 Wikis Way Chatham, MA 02633, or by calling (978)-443-4661. Dates, brochures, hunting unit directions, maps and other information about the hunt will be available on the station website at: www.fws.gov/refuges/mashpee.

VI. COMPATIBILITY DETERMINATION

Hunting and all associated program activities proposed in this plan are found compatible with the purposes of the refuge. Allowing hunting for the previously mentioned species on Mashpee NWR contributes to, and does not materially interfere with, or detract from, the mission of the Refuge System and the purposes for which the refuge was established. See appendix A for the complete compatibility determination for hunting on Mashpee NWR.

COMPATIBILITY DETERMINATION

USE: Hunting

REFUGE NAME: Mashpee National Wildlife Refuge (NWR, refuge)

DATE ESTABLISHED: September 28, 1995

ESTABLISHING AND ACQUISITION AUTHORITIES:

Fish and Wildlife Act of 1956

PURPOSE FOR WHICH ESTABLISHED:

“...for the development, advancement, management, conservation, and protection of fish and wildlife resources (16 U.S.C. 742f(a)(4)).”

NATIONAL WILDLIFE REFUGE SYSTEM MISSION:

To administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57).

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use?

The use is public hunting of white-tailed deer, wild turkey, gray squirrel, crow, quail, pheasant, ruffed grouse, American woodcock, waterfowl, Wilson’s snipe, sora rail, Virginia rail, coyote, fox, opossum, and raccoon at Mashpee NWR. Hunting was identified as one of six priority public uses of the Refuge System by the Refuge System Administration Act of 1966, as amended, when found to be compatible.

(b) Where would the use be conducted?

The areas we propose to open are two parcels totaling 290 acres that the U.S. Fish and Wildlife Service (FWS or Service) owns in fee title within the greater 5,871 acre Mashpee NWR Acquisition Boundary. The larger parcel is known as Bufflehead Bay (284 acres), located in Mashpee, Massachusetts (MA), south of Red Brook Road and north of Great Oak Road. The smaller parcel (5.5 acres) is located in Falmouth, MA, east of N. Ockway Road and west of Great Hay Road (see pages 4 through 8 of the Hunting Plan).

(c) When would the use be conducted?

Big game, upland game (except for rabbits), and migratory game bird hunting would occur within the seasons established by the Massachusetts Division of Fisheries and Wildlife (MassWildlife) for archery, firearms, and muzzleloader. Information sheets and maps for all hunting opportunities will be updated regularly and made available on the refuge website.

(d) How would the use be conducted?

The refuge will administer the hunting program according to State and Federal regulations. Federal regulations in 50 CFR chapter 1 subchapter C, and refuge-specific regulations will apply. However, the refuge manager may, upon annual review of the hunting program, modify the program to ensure compatibility. Access to refuge lands will be in the form of motor vehicles operating on roads open to the public and pedestrian access (walking/hiking, snowshoeing and cross country skiing).

Access within refuge hunt units will be by foot only. Entry to the main refuge unit (Mashpee unit south of Red Brook Road) will be by Great Hay Road, which can be accessed from Red Brook Road on the north, and Great Oak Road to the south. Parking will be provided on Red Brook Road as well as at the Town of Mashpee's Jehu Pond Conservation Area entrance at Great Oak Road. Hunter access and parking will not be permitted on Amy Brown Road, which is partially privately owned. Gates will be installed at the entrance on Red Brook Road and Amy Brown Road to eliminate vehicular access through the refuge.

Access to the Falmouth (Conboy) unit will be through the adjacent MassWildlife property (Mashpee Pine Barrens). Since this parcel is land locked by private and other partner lands which are not open to hunting, the Service is unable to provide parking for this unit.

The refuge will coordinate with MassWildlife. Hunting restrictions may be imposed if hunting conflicts with other higher priority refuge programs, endangers refuge resources, or public safety. No refuge-specific hunting permit will be required. For all hunts, hunting information sheets and maps are updated annually and made available to hunters on the refuge website and at refuge kiosks.

(e) Why is this use being proposed?

Hunting is one of the priority public uses outlined in the Refuge Improvement Act. The Service supports and encourages priority uses when they are compatible on national wildlife refuges. Hunting is an important wildlife management tool and a traditional form of wildlife-oriented recreation deeply rooted in America's heritage. When managed appropriately, hunting provides wildlife-dependent recreational opportunities that can foster a better appreciation and greater understanding of wildlife, animal behavior and their habitat needs, which can translate into stronger support for wildlife conservation, the refuge, the Refuge System, and the Service.

AVAILABILITY OF RESOURCES:

There are sufficient funds within the refuge's annual operating budget to administer this hunting program. Staff is needed for administrative duties, such as developing and reviewing plans, communicating with the public about the hunt and printing and processing materials. Refuge law enforcement officers are needed to ensure compliance with State and refuge regulations. We will request the assistance, as needed, of Service or other authorized law enforcement personnel from Federal, State, county or local agencies during the hunt. In addition to staff expenses, the refuge will incur the costs of posting signs, installing new gates, constructing and maintaining parking lots, maintaining vehicles, printing leaflets, and providing miscellaneous supplies.

Estimated costs to implement the Mashpee NWR hunt program on an Annual Basis include:

Activity	Material Costs	Labor Costs	Total
Administration	\$750	\$2200	\$2,950
Parking lot maintenance	\$500	\$400	\$900
Outreach	\$500	\$1,600	\$2,100
Law Enforcement	\$1500	\$5,000	\$6,500
Totals	\$3,250	\$9,200	\$12,450

ANTICIPATED IMPACTS OF THE USE:

Hunting has historically occurred on lands adjacent to the refuge. These lands are owned and managed by partners that work in close collaboration with refuge staff. There have been no discernible adverse impacts of hunting on these resources.

Vegetation

The hunting public is a small fraction of the total visitation that takes place on all lands near the refuge. Vegetation will be cleared for a small parking lot about 1,000 square feet adjacent to the road. Hunters traverse areas that are closed to all other users except hunters; however, the physical effects on vegetation are expected to be minimal.

Other impacts of recreational hunting may include the temporary trampling of vegetation and light soil erosion. Hunters walking off-trail during spring turkey season could cause minor trampling of emerging plants, especially in wet areas; however, we do not expect these impacts to be substantial, because turkey hunter density is expected to be low and dispersed. Most hunting occurs during the fall when most plants are entering dormancy, and impacts are expected to be minimal with hunter density expected to be low and dispersed. Some hunting seasons extend into winter when the ground is typically frozen or covered in snow, and when plants are dormant. Hunters would have little impact on plants during this period. For these reasons, cumulative impacts to plant communities and soils are likely to be minimal.

Soils

It is anticipated that hunting on the refuge will have minor impacts to soils. Soils can be compacted and/or eroded due to repeated foot traffic, especially in wetland habitats. The potential for soil erosion will vary during the year based on soil moisture and temperatures. Unsurfaced trails are susceptible to a variety of impacts including vegetation loss and compositional changes, soil compaction, erosion and muddiness, exposure of plant roots, trail widening, and the proliferation of visitor created side trails (Marion and Leung 2001). However, these effects are considered minimal due to the fact that hunters are generally dispersed, which reduces repeated erosive actions on soils. At the anticipated uses levels impacts to soils are not likely to be significant.

Hydrology (Water Resources and Wetlands)

Mashpee NWR contains a mixture of forested wetlands, shrub-scrub swamps and saltmarsh wetlands. These habitats are located throughout the hunt area and would be traveled by deer and migratory bird hunters, in particular. Areas open to migratory bird hunting could see an impact

from increased activities and boats. Impacts to water resources are generally by motorized boats used by migratory bird hunters that may inadvertently leak polluting substances. Migratory bird hunters are permitted to place a temporary blind on the marsh, but permanent blinds are prohibited. Some terrestrial wooded wetlands would be traversed to access small and big game hunting areas as well. Some impacts could occur if hunters use the same paths for access on a regular basis, but impacts are expected to be short-term and minor.

Wildlife

Hunting can have direct and indirect impacts on both target and non-target species. These impacts include direct mortality of individuals, changes in wildlife behavior, changes in wildlife population structure, dynamics, and distribution patterns, and disturbance from noise and hunters walking on- and off-trail (Cole and Knight 1990, Cole 1990, Bell and Austin 1985). In many cases, hunting removes a portion of the wildlife population that would otherwise naturally succumb to predation, disease, or competition (Bartmann et al. 1992).

In general, refuge visitors engaged in hunting will be walking off-trail. General disturbance from recreational activities, including hunting, vary with the wildlife species involved and the activity's type, level, frequency, duration, and the time of year it occurs. The responses of wildlife to human activities include avoidance or departure from the site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al. 1985, Kahl 1991, Klein 1993, Whittaker and Knight 1998), the use of suboptimal habitat (Williams and Forbes 1980), altered behavior or habituation to human disturbance (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993, Whittaker and Knight 1998), and an increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990).

For some species of birds, research has shown that the magnitude of disturbance behavior in individuals is negatively related to the proximity of humans to their habitat (Burger 1986). Some bird species flee from human disturbance, which can lower their nesting productivity and cause disease and death (Knight and Cole 1991). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. A recent study by Kays et al. (2016) found managed hunts within protected areas to marginally reduce activity levels of hunted species, including white-tail deer. They also found hunting did not affect the occupancy levels of hunted species, and had little impact on the distribution of other non-target wildlife species (Kays et al. 2016). Based on this and other recent literature, we believe impacts from hunting would be minimal (Hammitt et al. 2015, Kays et al. 2016).

Hunting results in the direct take of up to the daily limit of the target game in accordance with State regulations set by MassWildlife. Direct disturbance to non-target wildlife species is anticipated and would be negligible, with little to no impact on non-target wildlife populations (Hammitt et al. 2015, Kays et al. 2016).

Our estimates for annual hunt activity at Mashpee are as follows, assuming an average of 2 hunters per day:

Species	Harvest	Hunt Visits
Deer	4	30
Waterfowl	25	20
Turkey	2	12
Small Game	1	10
Woodcock	0	0
Coyote	2	10

Big Game

White-tailed Deer

White-tailed deer are an important part of the ecosystem and a valuable natural resource. There are now more than 95,000 white-tailed deer in Massachusetts. Densities range from approximately 10 to 15 deer per square mile in northwestern Massachusetts to more than 80 deer per square mile in areas of eastern Massachusetts that are closed to hunting (MassWildlife, 2018a). MassWildlife uses regulated hunting during three distinct seasons (archery, shotgun, and primitive firearms) to manage deer numbers across the state. The Fisheries and Wildlife Board oversees any changes to hunting seasons, bag limits, and antlerless deer permit numbers, which are set annually to achieve desired deer densities across 15 Wildlife Management Zones. MassWildlife's deer management strategy seeks to keep deer numbers in balance with social tolerance and below the level where major habitat impacts are observed. Hunters provide a unique service in helping to achieve this goal.

The regulated hunting of deer in accordance with State regulations would facilitate the ecological balance between the refuge and surrounding lands. Hunting would not compromise the persistence of deer on the refuge or surrounding lands. Healthy deer populations are maintained with consideration of the available habitat through regulated hunting. High deer densities have been shown to negatively impact plant and animal communities. Deer densities, if maintained through regulated hunting, will sustain the native vegetation and forest regeneration associated with the natural communities in those regions.

Hunting other game species will have a temporary effect as flushing deer flush and moving them away from hunters. Deer will use energy and experience physiological stress when avoiding hunters and other refuge visitors.

MassWildlife actively monitors the deer population and overall physical condition of the herd through the collection of harvest numbers and biological parameters at check stations staffed by wildlife biologists during select hunting season periods. The biological data from harvested deer, along with habitat data and other information, are used by State biologists to manage the deer herd throughout Massachusetts. Hunting on the refuge in accordance with State regulations would contribute to the State's population objectives, which are designed to keep deer populations within carrying capacities.

Turkey

Wild turkey are quite common on the refuge. At the time of colonial settlement, the wild turkey was widespread in Massachusetts. Due to habitat loss, turkeys were extirpated from the State and the last known native bird was killed in 1851. In the 1970s, MassWildlife biologists trapped 37 turkeys in New York and released them in the Berkshires. The new flock grew in what was an ideal mixture of agricultural and forested lands, and by the fall of 1978 the estimated population was about 1,000 birds. With birds also moving in from adjacent states, turkeys soon ranged throughout most parts of Massachusetts, west of the Connecticut River. In-state transplants of the birds, conducted until 1996, continued to expand their range into the central, northeastern, and southeastern parts of the state. The estimated population now exceeds 25,000 birds statewide, with an annual harvest of around 3,000 birds (MassWildlife 2018b).

Populations of turkeys that exceed the biological carrying capacity of their habitat can be decimated by diseases (including Avian Pox that can spread to other bird species) and are capable of degrading their habitat. Populations that are allowed to exceed the carrying capacity can cause extensive agricultural damage. Regulated hunting plays an important role in limiting the damage to agriculture from turkeys (MassWildlife 2018b). Overall, the effects on turkey populations are expected to be minimal due to the low number of hunters on refuge lands.

Small Game and Furbearers

Small game and furbearers include coyote, fox, raccoon, opossum and gray squirrel. The refuge has adopted Commonwealth of Massachusetts hunting seasons and bag limits for small game species and furbearer species with the exception of no night hunting, and no rabbits, due to the presence of New England Cottontails, which were a candidate species under the Endangered Species Act and are now a species of conservation concern. Many of these species are found abundantly throughout Massachusetts, and refuge staff has observed many of these game species on the refuge or on adjacent lands.

Small game species present on the refuge demonstrate high productivity and mortality rates, with population densities often tied to the quality of available habitat. Most of the small game species' populations are positively influenced by increasing percentages of shrub scrub habitat and younger forest age classes that provide the mix of cover and food for these animals. Refuge lands are currently being managed to increase the amount of shrubland habitat and early successional forest land. This provides a high quality habitat foundation to support higher densities of these species. Even so, population fluctuations can be driven by weather, changes in predator populations, and annual fluctuations in food supplies. Hunting mortality for these species is generally considered compensatory and is not considered a factor affecting population size (Edwards et al. 2003).

The number of hunters pursuing small game on Mashpee NWR is predicted to be low and is not expected to have negative impacts on population. Because the furbearer hunting seasons are largely set at a time of year when pelts are prime and of highest value, the harvest of furbearers during the regulated hunting seasons provides citizens an opportunity to utilize these sustainable, renewable fur resources. Several of these furbearing species are commonly viewed as nuisance animals due to their feeding behavior, which can conflict with the interests of humans.

Upland Game Birds

Crow, Quail, Ruffed Grouse, Pheasant

Upland game bird species such as ruffed grouse and quail are not currently very prevalent on the refuge, however, habitat management implemented to improve shrubland habitat, such as prescribed burning, may indirectly benefit these species. Crows are found throughout the State, especially in developed areas, and this species is sometimes responsible for predation of nesting shorebird's eggs and young. Ring-necked pheasants are not native species and are rarely seen on the refuge; however hunters may encounter a stray left over from stocking on nearby state wildlife management areas. Overall, the effects on upland game birds are expected to be minimal due to the low number of hunters on refuge lands.

Migratory Game Birds

Migratory birds are managed on a continental-wide cooperative effort with multiple agencies and partners, and hunting regulations are established in each state based on flyway data.

Commonwealth of Massachusetts regulations would apply. Framework regulations for various species, or guilds (e.g., ducks), are adjusted as needed based on established harvest strategies, population assessments, habitat conditions and productivity estimates. Hunting migratory birds on the refuge would reduce the total numbers of birds in the flyway, but harvest would be within allowable limits as determined by State and Federal agencies. Hunting waterfowl on the refuge would make the birds more skittish and prone to disturbance, reduce the amount of time they spend foraging and resting, alter their habitat usage patterns, and disrupt their pair and family bonds (Raveling 1979, Owen 1973, Madsen 1985, Bartelt 1987). Disturbance to non-target birds and resident wildlife may occur from hunting and associated hunter activity, but would be short-term and temporary. We allow the use of dogs to retrieve game. Overall, the effects on migratory birds are expected to be minimal due to the low number of hunters on refuge lands.

Federally listed Species and Species of Special Concern

One federally threatened species and one species of special concern are present on the refuge that could be impacted by recreational hunting. Protected species present on the refuge include, the Northern long-eared bat (federally threatened) and the New England cottontail. The New England cottontail is found in dense upland thickets and is known to occur on the refuge in areas open to hunting; however, rabbit hunting is not permitted on the refuge. The impacts to New England Cottontails would be in the form of disturbance and flushing rabbits from cover by hunters traversing through habitat. It is expected that these impacts will be short-term and minimal due to low hunter numbers. Northern long-eared bats occur on the refuge in mature pine/hardwood forests and are most active at night, making them less susceptible to the impacts of refuge hunting activities (Sichmeller 2010). To date, no maternity roosts or hibernaculum have been detected on the refuge or adjacent lands.

A Section 7 analysis under the Endangered Species Act (ESA) (16 U.S.C. 1536) of 1973 was conducted in cooperation with the Service's New England Field Office. The Section 7 analysis determined that the proposed activities will cause no effects to these species (appendix C).

Other Visitors and Users

The lands of Mashpee NWR owned in fee title by the Service are currently closed to all public uses, including hunting.

Economic

Mashpee NWR is located 65 miles from Boston, Massachusetts, on Upper Cape Cod in Barnstable County, MA. The total amount of protected lands (through the partnership) within the Mashpee NWR acquisition boundary is planned to total 5,871 acres when complete. At present time, the Service only owns a small percentage of the total protected lands within the refuge's approved acquisition boundary, including three parcels in fee title, totaling 293 acres. The Service also holds a conservation easement on 54 acres of Town of Mashpee lands and a lease on 190 acres of Orenda Wildlife Land Trust (Figure 2).

Mashpee and Falmouth have become prime resort locations, seasonal residences, and retirement communities for many people. People are attracted by its sandy beaches, extensive frontage on Waquoit and Popponesset Bays and four large freshwater ponds, and such amenities as championship golf courses. Falmouth is a large town geographically, and has one of the longest coastlines in the State. Much of the land bordering the water has a high value, is in high demand, and offers scenic views. Consequently, there is high land development pressure for vacation and second homes. However, large tracts of land have been set aside for public conservation including both waterfront properties and woodlands.

While hunting visitation may increase due to increased opportunities on the refuge, it will only account for a fraction of expenditures related to visitor use on adjacent conservation lands. Therefore, additional economic impact is expected to be negligible under this action.

Cumulative Impacts

Cumulative impacts result from incremental impacts of a proposed action when these are added to other past, present, and reasonably foreseeable future actions. While cumulative impacts may result from individually minor actions, they may, viewed as a whole, become substantial over time. The refuge hunting program is designed to be sustainable through time given relatively stable conditions, particularly because of close coordination with MassWildlife.

The cumulative impacts of hunting on big game, upland game, and migratory game birds populations at the refuge are expected to be negligible. The proportion of the refuge's harvest of these species is negligible when compared to local, regional, and statewide populations and harvest. For a thorough summary of anticipated impacts see the 2019 Mashpee NWR Hunting Plan's Environmental Assessment (appendix B).

PUBLIC REVIEW AND COMMENT:

This Compatibility Determination (CD) is part of the Mashpee NWR Hunting Plan and the accompanying Environmental Assessment (EA). The hunt plan, CD, and EA was made available to the public on April 5, 2019. A copy of the hunt package was available on the Refuge website and was sent to our partners including the Mashpee Wampanoag Tribe, State of Massachusetts, the Mashpee Conservation Commission, Falmouth Rod and Gun Club, and Waquoit Bay National Estuarine Research Reserve. Press releases were sent to local media outlets on the same day and the Cape Cod Times ran the story on April 8, 2019. The public comment period was open from April 5 to May 10, 2019 and a Hunt Plan Open House was held on May 2 at the Mashpee Town Hall (Waquoit Meeting Room) located at 16 Great Neck Road North. The open house was attended by 13 people, of whom four were opposed and nine supported the plan. We received a total of 17 written comments (three were received from the same address), of which seven were primarily in support and ten were primarily opposed against hunting at Mashpee NWR. Those opposed to the plan cited that “Refuges” should not allow hunting and should be “sanctuaries” for animals, or were opposed to any hunting in general. Two noted their safety concerns citing low law enforcement and hunter safety

After thorough review and consideration of these comments, it is deemed that opening Mashpee NWR for a multi-species hunt is still compatible with minimal environmental impacts to the resources. We have determined that the potential adverse impacts to habitat and wildlife would be minor or negligible, and short-term. No substantive changes were made to the plan based on the comments.

DETERMINATION (CHECK ONE):

_____ Use is not compatible.

 X Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

To ensure compatibility with refuge purpose(s) and Refuge System mission, hunting can occur at Mashpee NWR in accordance with State and Federal regulations, and special refuge-specific restrictions to ensure that wildlife and habitat management goals are achieved, and that the program is providing a safe, high-quality hunting experience for participants. We will evaluate this program annually and if monitoring indicates that this use or any of its component are not compatible (materially interferes with or detracts from fulfillment of the Refuge System mission or the purposes of the refuge), we would curtail, modify or eliminate the use or component.

The following stipulations are necessary to ensure compatibility:

- No hunting of rabbits.
- The refuge will be open for hunting half an hour before legal sunrise and close half an hour after legal sunset to hunters.

JUSTIFICATION:

Hunting is a priority wildlife-dependent use for the Refuge System through which the public can develop an appreciation for fish and wildlife. Service policy is to provide expanded opportunities for wildlife-dependent uses when compatible and consistent with sound fish and wildlife management and ensure that they receive enhanced consideration during planning and management.


Hunting satisfies a recreational need, but hunting on national wildlife refuges is also an important, proactive management action that can prevent overpopulation and the deterioration of habitat. Disturbance to other species may occur, but this disturbance is generally short-term and low-impact. Suitable habitat exists on refuge lands to support hunting as proposed.

We do not expect this activity to conflict with any of the other priority public uses or adversely affect biological resources. The use will not cause an undue administrative burden. We will manage the use in accordance with Federal and State regulations, as well as refuge-specific regulations to ensure wildlife and habitat management goals are achieved, and that the use is providing a safe, high-quality experience for participants. Annual adjustments can be made to the use or any of its components to ensure its continued compatibility. Therefore, through this process, we have determined that hunting on Mashpee NWR, in accordance with the stipulations provided above, is a compatible use that will not materially interfere with, or detract from, the fulfillment of the Refuge System mission or the purposes of the refuge.

Appendix A – Compatibility Determination

SIGNATURE:


Refuge Manager


(Signature)

9/20/19
(Date)

CONCURRENCE:

Regional Chief


(Signature)

10/18/2019
(Date)

MANDATORY 15 YEAR RE-EVALUATION DATE:

10 | 18 | 2034
(Date)

REFERENCES:

Bartelt, G.A. 1987. Effects of disturbance and hunting on the behavior of Canada geese family groups in East Central Wisconsin. *Journal of Wildlife Management*, 51, 517-522.

Bartmann, R.M., G.C. White, and L.H. Carpenter. 1992. Compensatory mortality in a Colorado mule deer population. *Wildlife Monographs*, 121, 1-39.

Belanger, L. and J. Bedard. 1990. Energetic cost of man-induced disturbance to staging snow geese. *Journal of Wildlife Management*, 54, 36-41.

Bell, D.V. and L.W. Austin. 1985. The game-fishing season and its effects on overwintering wildfowl. *Biological Conservation*, 33, 65-80.

Burger, J. 1981. Effect of human activity on birds at a coastal bay. *Biological Conservation* 21, 231-241.

Burger, J. 1986. The effect of human activity on shorebirds in two coastal bays in northeastern United States. *Biological Conservation*, 13, 123-130.

Cole, D.N. 1990. Ecological impacts of wilderness recreation and their management. In J.C. Hendee, G.H. Stankey, and R.C. Lucas (Eds.), *Wilderness Management* (pp. 425-466). Golden, CO: North American Press.

Cole, D. N. and R. L. Knight. 1990. Impacts of recreation on biodiversity in wilderness. *Natural Resources and Environmental Issues*, 0, 33-40.

Edwards, J., M. Ford, and D. Guynn. 2003. Fox and gray squirrels in Wild Mammals of North America. Pgs 248-267. Johns Hopkins University Press.

Hammit, W. E., D. N. Cole, and C. A. Monz. 2015. *Wildlife Recreation: Ecology and Management*. John Wiley & Sons, Oxford, UK.

Havera, S. P., L. R. Boens, M. M. Georgi, and R. T. Shealy. 1992. Human disturbance of waterfowl on Keokuk Pool, Mississippi River. *Wildlife Society Bulletin*, 20, 290-298.

Kahl, R. 1991. Boating disturbance of canvasbacks during migration at Lake Poygan, Wisconsin. *Wildlife Society Bulletin*, 19, 242-248.

Kaiser, M. S. and E. K. Fritzell. 1984. Effects of river recreationists on green-backed heron behavior. *Journal of Wildlife Management*, 48, 561-567.

Kays, R., A. W. Parsons, M. C. Baker, E. L. Kalies, T. Forrester, R. Costello, C. T. Rota, J. J. Millspaugh, and W. J. McShea. 2016. Does hunting or hiking affect wildlife communities in protected areas? *Journal of Applied Ecology* doi:10.1111/1365-2664.12700

Klein, M. L. 1993. Waterbird behavioral responses to human disturbance. *Wildlife Society Bulletin*, 21, 31-39.

Knight, R. L. and D. N. Cole. 1991. Effects of recreational activity on wildlife in wildlands. *Transactions of the 56th North American Wildlife and Natural Resources Conference*, 238-247.

Korschen, C. E., L. S. George, and W. L. Green. 1985. Disturbance of diving ducks by boaters on a migrational staging area. *Wildlife Society Bulletin*, 13, 290-296.

Madsen, J. 1985. Impact of disturbance on field utilization of pink-footed geese in West Jutland, Denmark. *Biological Conservation*, 33, 53-63.

Marion, J. L. & Y. F. Leung. 2001 *Indicators and Protocols for Monitoring Impacts of Formal and Informal Trails in Protected Areas*. 217.

Massachusetts Division of Fisheries and Wildlife (MassWildlife). 2018a. Deer Harvest Data. Accessed February 2019 at: <https://www.mass.gov/service-details/deer-harvest-data>.

Massachusetts Division of Fisheries and Wildlife (MassWildlife). 2018b. Learn about turkeys. Accessed February 2019 at: <https://www.mass.gov/service-details/learn-about-turkeys>.

Miller S. G., R. L. Knight, and C. K. Miller. 1998. Influence of Recreational Trails on breeding bird communities. *Ecological Society of America*, 8(1), 162-169.

Morton, J. M., A. C. Fowler, and R. L. Kirkpatrick. 1989. Time and energy budgets of American black ducks in winter. *Journal of Wildlife Management*, 53, 401-410.

Owen, M. 1973. The management of grassland areas for wintering geese. *Wildfowl*, 24, 123-130.

Raveling, D. G. 1979. Traditional use of migration and winter roost sites by Canada geese. *Journal of Wildlife Management*, 43, 229-235.

Sichmeller, T. J. 2010. Determining energy conservation during torpor for three and response of *Myotis* species to human disturbance while day roosting. Thesis, Ball State University.

Ward, D.H. and R. A. Stehn. 1989. Response of brant and other geese to aircraft disturbance at Izembek Lagoon, Alaska. Anchorage, AK: U.S. Fish and Wildlife Service, Alaska Fish and Wildlife Research Center. Final report to the Minerals Management Service.

Whittaker, D. and R. Knight. 1998. Understanding wildlife responses to humans. *Wildlife Society Bulletin*, 26(3), 312-317.

Williams, G. J. and E. Forbes. 1980. The habitat and dietary preferences of dark-bellied brant geese and widgeon in relation to agricultural management. *Wildfowl*, 31, 151-157.

Environmental Assessment for Hunting at Mashpee National Wildlife Refuge

This Environmental Assessment (EA) evaluates the impacts associated with this proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (516 DM 8) and U.S. Fish and Wildlife Service (Service) (550 FW 3) policies.

Proposed Action

The Service is proposing to open public hunting opportunities for big game, small game (excluding rabbits), furbearers, upland game birds, and migratory game birds on Service-owned lands in Mashpee National Wildlife Refuge (NWR, refuge). Situated in Mashpee and Falmouth on Cape Cod, Massachusetts, the amount of total conserved lands through a unique partnership is planned to total 5,871 acres within an approved acquisition boundary. Since much of the proposed lands have already been protected only a small percentage of land will be owned by the Service in fee title. Currently, 293 acres are in Service ownership, and we are proposing to open 290 acres for hunting opportunities. The conserved lands within the Mashpee NWR approved acquisition boundary are cooperatively managed through a Memorandum of Understanding with: Massachusetts Department of Fish and Wildlife (MassWildlife), Wampanoag Tribal Council, Massachusetts Department of Conservation and Recreation (DCR)/Waquoit Bay National Estuarine Research Reserve (WBNERR), Falmouth Rod and Gun Club, Town of Falmouth, Town of Mashpee, Orenda Wildlife Land Trust and the Friends of Mashpee NWR.

This proposed action is iterative and may evolve over time during the process as we refine the proposal and learn more from the public, tribes, and other agencies. Therefore, the final proposed action may be different from the original. The final decision on the proposed action will not be made until after conclusion of the public comment period for the EA.

Background

The Service acquired the land for the Mashpee NWR in 1995 “for the development, advancement, management, conservation, and protection of fish and wildlife resources...” 16 U.S.C. § 742 f(a)(4) “and to preserve and protect natural resources associated with the Waquoit Bay area for the protection of waterfowl and wildlife”.

National wildlife refuges are guided by the mission and goals of the National Wildlife Refuge System (Refuge System), the purposes of an individual refuge, Service policy, and laws and international treaties. Relevant guidance includes the Refuge System Administration Act of 1966, as amended by the Refuge System Improvement Act of 1997, Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations (CFR) and Service Manual.

The mission of the Refuge System, as outlined by the Refuge System Administration Act, as amended by the Refuge System Improvement Act (16 U.S.C. 668dd et seq.), is to:

“...administer a national network of lands and waters for the conservation, management and,

where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

The Refuge System Administration Act mandates the Secretary of the Interior in administering the System to:

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the Refuge System;
- Ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained for the benefit of present and future generations of Americans;
- Ensure that the mission of the Refuge System described at 16 U.S.C. 668dd(a)(2) and the purposes of each refuge are carried out;
- Ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the States in which the units of the Refuge System are located;
- Assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the Refuge System and the purposes of each refuge;
- Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the Refuge System through which the American public can develop an appreciation for fish and wildlife;
- Ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses; and
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

Therefore, it is a priority of the Service to provide for wildlife-dependent recreation opportunities, including hunting and fishing, when those opportunities are compatible with the purposes for which the refuge was established and the mission of the Refuge System.

Purpose and Need for the Proposed Action

Hunting is a healthy, traditional recreational use of renewable natural resources deeply rooted in America’s heritage, and it can be an important wildlife management tool. The Refuge System Administration Act of 1966, the Refuge System Improvement Act of 1997, other laws, and the Service’s policies permit hunting on a national wildlife refuge as a priority wildlife-dependent recreational opportunity when it is compatible with the purposes for which the refuge was established and acquired.

National wildlife refuges, including several refuges within the Eastern Massachusetts NWR Complex (Refuge Complex), conduct hunting programs within the framework of Federal and State regulations. All authorized hunts are at least as restrictive as the State of Massachusetts. By maintaining hunting regulations that are as, or more, restrictive than the state, individual refuges ensure that they are maintaining seasons which are supportive of management on a local and regional basis. Hunters on the refuge are expected to be ethical and respectful of other hunters, non-consumptive users, wildlife species, and the environment while on refuge lands.

Refuge lands of the Mashpee NWR do not currently offer any opportunities for the public to hunt. The objectives of the hunting program on Refuge lands are to:

1. Provide the public with a high-quality recreational experience on refuge lands and increase opportunities and access for hunters;
2. Implement a hunting program that is safe for all refuge users;
3. Design a hunting program that is administratively efficient and manageable with existing staffing levels; and
4. Design a hunting program that is in alignment with refuge habitat management objectives.

Department of the Interior Secretarial Order 3356 directs the Service to enhance and expand public access to lands and waters on national wildlife refuges for hunting, fishing, recreational shooting, and other forms of outdoor recreation. The proposed action will also promote one of the priority public uses of the Refuge System, and will promote stewardship of our natural resources and increase public appreciation and support for the refuge by providing opportunities for visitors to hunt. To address the needs stated above, the purpose of the proposed action will bring the refuge into compliance with management guidance detailed in the orders, policy, and Federal law to “recognize compatible wildlife-dependent recreational uses as the priority general uses of the Refuge System” and “ensure that opportunities are provided within the Refuge System for compatible wildlife-dependent recreational uses.” 16 U.S.C. 668dd(a)(4)).

This EA serves as the NEPA document that analyzes the impacts on environmental, cultural, and historical resources of providing hunting opportunities on the refuge.

Alternatives Considered

Alternative A – Keeping Mashpee NWR Closed to Hunting (e.g. Current Management Strategies) – [No Action Alternative]:

The No Action Alternative would keep all of Mashpee NWR closed to all forms of hunting.

Alternative B –Opening Mashpee NWR for migratory game birds, deer, upland game birds, squirrel and furbearers (excluding rabbits) – [Proposed Action Alternative]:

The refuge has prepared a hunting plan, which is presented in this document as the Proposed Action Alternative. Under the Proposed Action Alternative, the Service is proposing to open hunting opportunities to the Bufflehead Bay and Conboy parcels of the refuge. The seasons, bag limits, and regulations will be consistent with those set by Massachusetts Division of Fish and Wildlife (Mass Wildlife) except where noted.

Hunters would also have to comply with additional refuge-specific regulations, including but not limited to those contained in 50 CFR Chapter 1, subchapter C. These regulations may be modified as conditions change or if refuge expansion continues/occurs. Under this alternative, the species identified within this hunting plan are the only legal species to be hunted on the refuge. Hunting of all other species is prohibited. Refuge hunting hours are one-half hour before sunrise to one-half hour after sunset, and we allow the use of dogs to retrieve game.

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, consider zoning for different uses, or further liberalize hunting regulations within the limits of State law. Restrictions

would occur if hunting becomes inconsistent with other higher priority refuge programs, or endangers refuge resources or public safety.

Our estimates for annual hunt activity at Mashpee NWR are as follows, assuming an average of two hunters per day:

Species	Harvest	Hunt Visits
Deer	4	30
Waterfowl	25	20
Turkey	2	12
Small Game	1	10
Woodcock	0	0
Coyote	2	10

Big Game

White-tailed deer

White-tailed deer are an important part of the ecosystem and a valuable natural resource. White tailed deer populations range from 12-18 individuals per square mile in western and central Massachusetts to over 50 individuals per mile in certain portions of eastern Massachusetts (MassWildlife 2018a). State data estimates that the state's white-tailed deer population exceeded 100,000 individuals in 2017 with approximately 13,305 deer harvested that year (MassWildlife 2018a). White-tailed deer will be taken according to Massachusetts State regulations, with the exception of refuge-specific regulations listed above. Access to refuge lands is from public parking lots and adjoining public lands and water, where they occur. Refuge staff will work with partners to identify areas that will provide access for hunting. This provides approximately 70 days of deer hunting to hunters on refuge lands.

Turkey

Wild turkey are quite common on the refuge. At the time of colonial settlement, the wild turkey was widespread in Massachusetts. Due to habitat loss, turkeys were extirpated from the state and the last known native bird was killed in 1851. In the 1970s, MassWildlife biologists trapped 37 turkeys in New York and released them in the Berkshires. The new flock grew in what was an ideal mixture of agricultural and forested lands, and by the fall of 1978 the estimated population was about 1,000 birds. With birds also moving in from adjacent states, turkeys soon ranged throughout most parts of Massachusetts, west of the Connecticut River. In-state transplants of the birds, conducted until 1996, continued to expand their range into the central, northeastern, and southeastern parts of the state. The estimated population now exceeds 25,000 birds statewide, with an annual harvest of around 3,000 birds (MassWildlife 2018b).

Wild turkey will be taken according to Massachusetts State regulations. Access to refuge lands is from public parking lots and adjoining public lands and water, where they occur. Refuge staff will work with partners to identify areas that will provide access for hunting.

Upland Game Birds

Crow, Quail, Pheasant and Ruffed Grouse

Upland game bird species such as ruffed grouse and quail are not currently very prevalent on the refuge; however, habitat management implemented to improve shrubland habitat may indirectly benefit these species. Crows are found throughout the state, especially in developed areas, and this species is sometimes responsible for predation of nesting shorebird's eggs and young. Ring-necked pheasants are not native species and are rarely seen on the refuge; however, hunters may encounter a stray left over from stocking on nearby State wildlife management areas. Upland game birds will be taken according to Massachusetts State regulations, with the exception of refuge-specific regulations.

Small Game and Furbearers

Coyote, fox, raccoon, opossum, and gray squirrel

Many small game species present on the refuge are r-strategists species, demonstrating high productivity and mortality rates, with population densities often tied to the quality of available habitat. Most of the small game species' populations are positively influenced by increasing percentages of shrub scrub habitat and younger forest age classes that provide the mix of cover and foods for these animals. Refuge lands are currently being managed to increase the amount of shrubland habitat and early successional forest land. This provides a high quality habitat foundation to support higher densities of these species. Even so, population fluctuations can be driven by weather, changes in predator populations, and annual fluctuations in food supplies.

Small game and furbearers will be taken according to Massachusetts State regulations, with the exception of refuge-specific regulations listed above. Access is from public roads and adjoining public lands and water, where they occur. Refuge staff will work with partners to identify areas that will provide hunting and fishing access.

Migratory Birds

Migratory bird species taken during the migratory game bird hunting season and known to usually occur around the refuge primarily include Canada goose (*Branta canadensis*), and a variety of duck species such as mallard (*Anas platyrhynchos*), wood duck (*Aix sponsa*), and black duck (*Anas rubripes*). Access to refuge lands is from public roads and adjoining public lands and water, where they occur. Refuge staff will work with partners to identify areas that will provide access for hunting and fishing.

Migratory birds are managed through a Continental-wide cooperative effort with multiple agencies and partners, although ultimately the Service establishes the annual framework regulations (season length, bag limits, and framework dates). Framework regulations for various species, or guilds (e.g., ducks), are adjusted as needed based on established harvest strategies, population assessments, habitat conditions and productivity estimates. Individual states select migratory game bird hunting seasons within the Federal framework.

Migratory bird hunting will be in accordance with the Federal, State, and refuge-specific regulations outlined in 50CFR chapter 1 subchapter C.

Mitigation Measure to Avoid Conflict

The refuge-specific regulations detailed in the plan (and in 50 CFR) are measures under the

Proposed Action Alternative that will reduce or avoid impacts. Refuge and State law enforcement officers enforce hunting regulations. Providing hunting information through various forums will ensure the public is aware of applicable laws and policies.

To minimize conflict, refuge-specific hunt regulations and hunt unit maps (brochures) will be made available to hunters at kiosks, the refuge website and at the Refuge Complex Headquarters in Sudbury, Massachusetts. To help reduce interaction between hunters on the refuge and other user groups off the refuge, refuge boundaries and hunt area boundaries will be clearly posted.

This proposed alternative offers increased opportunities for public hunting and fishing and fulfills the Service's mandate under the Refuge System Improvement Act of 1997. The Service has determined that the hunt and fish plan is compatible with the purposes of the Mashpee NWR and the mission of the Refuge System.

Affected Environment

Mashpee NWR consists of 356 acres in Barnstable County, Massachusetts. The proposed action will occur on 290 acres, on two separate land parcels of the refuge. Refuge lands are dominated by Pitch pine- mixed oak woodlands. Other less dominant habitats consist of red maple swamps, scrub shrub wetlands, emergent saltmarsh and vernal pools. Table 1 provides a list of habitat types and brief descriptions. Tables 2 through 6 provides additional, brief descriptions of affected resources.

Table 1 provides habitat type and brief descriptions.

Habitat Type	Description
Pitch pine – mixed oak forest	The pitch pine-mixed oak forests are the most abundant habitat within the refuge and are classified as <i>Pinus rigida</i> – <i>Quercus</i> (<i>coccinea</i> , <i>velutina</i> , <i>alba</i>) Forest Alliance with pitch pine and scarlet, black, and white oak as dominant plant species. Other species include white pine, black huckleberry, and lowbush blueberry. Pitch pine is a fire-tolerant species with numerous fire adaptations, including trunk and crown sprouting ability, thick bark, high resin content, and partially serotinous (remaining closed with delayed seed dispersion) cones that open and disperse seeds following fire (Gucker 2007). Pitch pine is dependent on fire for long-term persistence. Associated plant species include heaths such as blueberries and huckleberries with high resin content, and scrub oak, a species that sprouts vigorously following fire (Gucker 2007). White oak is one of the oak species found within the pitch-pine mixed oak habitat. Regeneration is stimulated by fire, by vigorous stump sprouting, and by release of suppressed understory plants. Prolific acorn production also occurs following fire (Boerner et al. 1988). Many migratory songbirds rely on shrubland habitat that can be fostered through proper management of the pitch pine/mixed oak forest found on the refuge. They depend on this for their breeding and nesting success. Such species include

	the prairie warbler, chestnut-sided warbler, ovenbirds, and wood thrush. These forests are also important for several priority species including, New England cottontail rabbit, Northern long-eared bat and box turtles.
Hardwood Swamp	<p>Forested swamps occur in large and small patches within and around the larger upland formations. They occur on terrain with little to no slope, in topographic depressions and sumps, and often in watershed headwater basins. They are typically dominated by Red maple (<i>Acer rubrum</i>) and Highbush blueberry (<i>Vaccinium corymbosum</i>).</p> <p>Drainage is typically poor to very poor, with seasonal fluctuations varying greatly in areas that stem from stream or lake flooding, and less so where groundwater or surface runoff is the primary source. Soils vary from shallow to deep and can be predominately mineral, organic, or muck with occasionally a peat component (Gawler 2008). Forested swamps provide important wildlife habitat; for example, forested wetlands tend to have more total birds as well as more bird species nesting in a given area than upland forested sites (Newton 1988). Red maple swamps occur in a wide range of settings and provide habitat for a large variety of wetland-dependent species including wood ducks, marbled salamanders, and beaver. Studies have demonstrated that red maple swamps constitute prime habitat for amphibians (Golet et al. 1993).</p>
Scrub-shrub wetland (Leatherleaf bog/frost bottom)	<p><i>Shrub Swamps:</i> Shrub swamps are wetlands dominated by woody shrubs. They occur throughout the watershed and are highly variable depending on climate, past disturbance, hydrology, and mineral enrichment. These habitats are typically subject to seasonal flooding and saturated soils. They are often found in transitional zones between marshes and forested wetlands, along pond and lake margins, and along rivers and streams (Gawler 2008, Thompson and Sorenson 2000).</p>
Salt marsh	<p>Salt marshes are generally dominated by cordgrasses, often in mixed associations with spike grass and black grass. Other plants of the high salt marsh wetland include sea lavender. Additional plants associated with the low salt marsh wetlands include glasswort (woody) and glasswort (slender). The upland shrub borders sometimes consist of marsh elder and groundsel-bush. Invasive <i>Phragmites</i> (common reed) is also quite prominent in some of the marsh habitats. There are many bird species that utilize salt marshes, including, snowy egret, American black duck, willet, and saltmarsh sparrow. Marine animals include snails, small crustaceans, and mussels (refer to aquatic section for specifics to the refuge) (NHESP 2016).</p>

Vernal Pools	There are two known State certified vernal pools on Service lands. Vernal pools are ephemeral wetlands that fill annually from precipitation, runoff, and rising groundwater. Usually vernal pools in Massachusetts fill in the spring, and most years they become completely dry later in the season, losing water over the summer to evaporation and transpiration. This wet-dry cycle – a vernal pool’s hydroperiod – prevents fish from becoming established permanently in these seasonal wetlands, and thus presents a fish-free, if temporary, habitat for many species. Vernal pools support breeding for common vertebrates, such as wood frogs and spotted salamanders. Wood frog is considered an obligate vernal pool species, and as with other amphibians whose life histories are tied to vernal pool habitats, this species faces continual and cumulative pressure from development as vernal pools and their surrounding upland forests are impacted by ongoing development. Spotted salamanders also rely on vernal pools for breeding and emerge in late spring and early summer after metamorphosis. Many other common and rare animals use vernal pools for some aspect of their life history (feeding, breeding, over-wintering, hydrating, etc.). The water-willow stem borer (State-threatened) larvae feed exclusively on water-willow located in the shallowest edges of vernal pools. Others include spotted turtles, four-toed salamanders (State Special Concern), Eastern box turtles (State Special Concern), wood turtles (State Special Concern), spring peepers, green frogs, pickerel frogs, American toads, Fowler’s toads, red-spotted newts, painted turtles, snapping turtles, dragonflies, and damselflies.
Open Water	Open water habitats include rivers, streams, and tidal estuaries and associated transitional habitats influenced by fluctuating water levels. Diadromous, anadromous and indigenous fish, freshwater mussels, mayflies, dragonflies, and amphibians rely on these communities for some stage of their life cycle. These habitats also provide foraging opportunities for other taxa including, waterfowl, herons, egrets, mink, and otter.

Environmental Consequences of the Action

This section analyzes the environmental consequences of the action on each affected resource, including direct and indirect effects. This EA only includes the written analyses of the environmental consequences on a resource when the impacts on that resource could be more than negligible and therefore considered an “affected resource”. Any resources that will not be more than negligibly impacted by the action have been dismissed from further analyses.

Tables 2 through 6 provide: 1) a brief description of the affected resources in the proposed action area; and 2) anticipated impacts of the proposed action and any alternatives on those resources, including direct and indirect effects. Table 7 provides a brief description of the cumulative

impacts of the proposed action and any alternatives.

Impact Types:

- **Direct effects** are those caused by the action and occur at the same time and place;
- **Indirect effects** are those which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable; and
- **Cumulative impacts** result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions.

Table 2. Affected Natural Resources and Anticipated Impacts of the Proposed Action and Any Alternatives

NATURAL RESOURCES	
Affected Resource	ANTICIPATED DIRECT AND INDIRECT IMPACTS
<p>White-tailed Deer Populations of deer have generally demonstrated a slight increase in Eastern Massachusetts. The State estimates that the white-tailed deer population in Massachusetts exceeds 100,000 individuals (MassWildlife 2018a). Populations range from 12 to 18 individuals per square mile in western and central Massachusetts to over 50 individuals per square mile in certain portions of eastern Massachusetts (MassWildlife, 2018a).</p> <p>Historically, deer overpopulation has caused damage to the maritime shrub habitat in the eastern portion of the state, as well as contributing to an unhealthy deer population. The State adjusts seasons and limits to maintain healthy populations.</p>	<p>No Action: No hunting of deer on Mashpee NWR is allowed. Hunting of deer and other game is allowed on adjacent lands. Current levels harvested would be expected as no new opportunities would be provided, and public interest in big game hunting would remain the same. These impacts are considered to be negligible due to the small number of hunters. There would continue to be limited mortality to the hunted big game species. Continuation of the current management could result in an increase in deer population on the refuge. This increase could then have a negative impact on refuge vegetation due to overgrazing. In addition, an increase in deer population could negatively impact the health of the deer population through the prevalence of disease or loss of food.</p> <p>Proposed Action: Additional refuge lands will be opened to hunting under the Proposed Action. It is unlikely that hunter numbers in this area will increase considerably, though some increase is expected with the increased opportunities. An increase in the hunting area would increase the number of deer harvested on the refuge, which would have a positive effect on habitat by reducing deer browsing. Developing partnerships with other agencies or conservation groups to promote hunting opportunities could also help to increase the numbers of hunters in the future. Disturbance to deer in the area will occur during the hunting season, but the disturbance is considered negligible, as deer are prone to move regularly over large areas.</p>

<p>Wild Turkey Turkeys occur in pockets of suitable habitat throughout the refuge. The State population is estimated at greater than 25,000 birds (MassWildlife 2018b). In 2017, over 3,000 turkeys were harvested in the State during the spring and fall hunting seasons. The State will adjust seasons, and limits to maintain healthy populations</p>	<p>No Action: No turkey hunting would be permitted on the refuge; therefore, no impacts to turkeys or by turkey hunting would occur. Local turkey populations could increase thus resulting in a higher likelihood of disease and or famine.</p> <p>Proposed Action: Opening refuge lands to turkey hunting will moderately negatively impact the local turkey population. The State’s turkey populations is at an all-time high of over 25,000 birds with about 3,000 harvested State-wide annually (MassWildlife 2018b). The State generally does not change the number of permits issued for turkey hunting under refuge alternatives, so there is not expected to be an increase in harvested turkeys State-wide. However, opening up refuge lands to turkey hunting may result in a minor increase in turkey harvest. Therefore, harvest on the refuge would have a negligible impact on the overall population. Disturbance to turkeys in an area will occur during the hunting season, but the disturbance is considered negligible, as flocks are prone to move regularly over large areas. Population control of the species might be beneficial in reducing population sizes and decreasing the likelihood of local disease and or famine.</p>
<p>Upland Game Birds (<i>crow, quail, pheasant and ruffed grouse</i>) Ruffed grouse and quail occur in limited number within suitable habitat on the refuge. Crows are found throughout Massachusetts, especially in developed areas, and this species is sometimes responsible for predation of nesting shorebird’s eggs and young. Pheasants are non-native species and will only be encountered if escaped from nearby stacked wildlife management areas.</p>	<p>No Action: No hunting of ruffed grouse, quail, pheasant or crow would be permitted; therefore, no impacts to those species would occur. Crow populations would remain unchecked which could negatively impact nesting shorebird populations on the refuge.</p> <p>Proposed Action: Opening refuge lands to ruffed grouse, quail, pheasant and crow hunting will moderately negatively impact the local species populations. Disturbance to these species in the area will occur during the hunting season, but the disturbance is considered negligible as hunter numbers will be low and these species are prone to move regularly over large areas. Crow hunting may also benefit protected beach nesting birds such as the least tern and piping plover.</p> <p>Partnerships and assisted hunting opportunities planned could assist in increasing hunter numbers in the future.</p>
<p>Small Game and Furbearer (<i>gray squirrel, coyote, fox, raccoon, opossum</i>) No systematic inventory of</p>	<p>No Action: No squirrel or furbearer hunting would be permitted on the refuge; therefore, no direct impacts to these species through hunting would occur. The increase in predators like coyotes, fox and raccoons, however, might</p>

<p>mammalian species has been conducted at the refuge. However, these game species are found quite commonly throughout Massachusetts.</p>	<p>have a detrimental impact on nesting birds or other prey species if they are left unchecked. This could result in increased predation of New England Cottontails and other prey species, as well as a higher likelihood of disease and or famine.</p> <p>Proposed Action: This alternative would open new lands to squirrel and furbearer hunting. Disturbance to these species in the area may occur during the hunting season, although the disturbance is considered negligible as the number of individuals encountered will be small.</p>
<p>Migratory Birds Waterfowl, woodcock, and rail harvest is cooperatively regulated among an international consortium (Atlantic Flyway Council (AFC)) of wildlife managers and are based on surveys, harvest data, and habitat data. Refuge populations of these species have remained relatively stable.</p>	<p>No Action: No migratory bird hunting would be permitted on the refuge; thus, no direct impacts to these species through hunting would occur.</p> <p>Proposed Action: This alternative would open new lands to migratory game bird hunting. This may result in a small increase in hunter numbers and harvest, which could have minor negative impacts to migratory bird populations locally. Potential impacts to target migratory species include direct mortality or injury and indirect changes in behavior. It is not anticipated that the proposed action at the refuge would influence populations at the Flyway or Continental level.</p>
<p>Other Wildlife and Aquatic Species The refuge supports a high diversity of wildlife species, including game and nongame species, reptiles, amphibians, and invertebrates. Some songbirds and raptors breed at the refuge, whereas others utilize the refuge for wintering and during migration.</p>	<p>No Action: Refuge lands will remain closed to hunting opportunities which will result in no increase in impacts or disturbance to wildlife species.</p> <p>Proposed Action: While resident and non-game wildlife in areas newly opened to hunters and hunting may be negatively impacted by disturbance, that impact is expected to be negligible. It is anticipated that the number of hunters will be low and tend not to disperse very far from parking areas and roads, which leaves large areas of refuge land undisturbed. Some prey species, such as nesting shorebirds, could benefit from reduced predator populations.</p>

Threatened and Endangered Species (T&E) and Other Special Status Species

Federal:

The northern long-eared bat (*Myotis septentrionalis*) is listed as threatened. This species has been documented on the refuge using acoustic monitoring and mist net surveys. To date, no maternity roosts or hibernaculum have been detected on the refuge or adjacent lands.

New England cottontails (*Sylvilagus transitionalis*) have been documented and were once considered for listing under the ESA. However, due to rangewide conservation measures, the Service decided not to list the species.

Nevertheless, the refuge has determined it prudent to not open the refuge to rabbit hunting at this time until local populations can be increased and accurately measured.

Massachusetts:

The following wildlife species are confirmed to occur near the refuge and have been listed by Massachusetts as threatened or endangered: three spine stickleback, American brook lamprey, diamondback terrapin, eastern spadefoot toad, pied-billed grebe, American bittern, least bittern, peregrine falcon, upland sandpiper, short-eared owl, sedge wren, northern harrier, bald eagle, piping plover, northern parula, grasshopper sparrow, tri-

No Action: Refuge lands will remain closed to hunting opportunities which will result in no increase in impacts or disturbance to threatened and endangered species or other species of special conservation concern.

Proposed Action: Under this proposal, the refuge does not intend to open up to rabbit hunting; therefore, there will be no direct impacts to New England cottontails from hunting. Some disturbance to rabbits, such as temporary displacement, may occur as hunters traverse through the forests. However, the number of hunters is expected to be low and impacts will be negligible.

Fall archery deer hunters will hunt from tree stands, which may disturb roosting bats that are still present on the refuge in early October. By mid-October, most bats will have left the refuge for their hibernacula. An Endangered Species Act Section 7 evaluation was conducted for the northern long-eared bat. The evaluation determined that the expansion of the hunting program would cause no effect on this species.

<p>colored bat, eastern small footed bat, little brown bat, northern long-eared bat, water-willow stem borer moth, pine barrens bluet, and scarlet bluet.</p>	
<p>Vegetation Vegetation varies throughout the refuge; however, hunt areas are generally forested wetlands and uplands, shrublands or tidal salt marsh.</p>	<p>No Action: Refuge lands will remain closed to hunting opportunities which will result in no increase in impacts or disturbance to vegetation. However, if the refuge remains closed to hunting, increased deer populations and associated browsing may negatively affect vegetation.</p> <p>Proposed Action: Additional lands would be open to hunting under the proposed action. Vegetation will be cleared for a small parking area about 1,000 square feet adjacent to the road. Trampling of vegetation on newly opened lands could increase slightly because of an increased number of users and increase in frequency of use. However, the number of visitors participating in hunting on the refuge lands is expected to be low and adverse impacts to vegetation are not expected. Additionally, hunter use during all seasons will be dispersed throughout the refuge, minimizing impact to any one area. Off-road vehicles are prohibited on the refuge, including for hunting. The refuge is easily accessible from the public road system. An increase in hunting opportunities may have a slight, positive impact to vegetation and to habitats by reducing the number of deer (i.e., reduced deer browsing), especially in areas with high deer populations that are adversely affecting the vegetative community. Impacts are expected to be minimal due to the small size of the parking area, low amount of expected hunters, and the slight positive impacts by reducing grazing pressure from deer.</p>
<p>Water Resources Current management of the hydrologic processes on the refuge is a combination of natural spring fed to tidal influence and minor stream channel restoration on Abigail's Brook.</p>	<p>No Action: Service lands will remain closed to hunting therefore impacts to water resources by hunters is not anticipated.</p> <p>Proposed Action: Areas open to migratory bird hunting could see an impact from increased activities and boats. Impacts to water resources are generally by motorized boats used by migratory bird hunters that may inadvertently leak polluting substances. These impacts would be considered minor and short-term as the number of hunters engaged in such activities is projected to be low.</p>

<p>Wetlands Mashpee NWR contains wetland habitats including shrub/thicket, bog, swamp, and salt marsh. These habitats are located throughout the hunt area and would be traveled by deer and migratory game bird hunters, in particular.</p>	<p>No Action: Service lands will remain closed to hunting therefore impacts to water resources by hunters is not anticipated.</p> <p>Proposed Action: Additional lands would be open to hunting under the proposed action, but impacts to wetlands from increased foot traffic is expected to be negligible and short-term.</p>
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Table 3. Affected Visitor Use and Experience and Anticipated Impacts of the Proposed Action and Any Alternatives

VISITOR USE AND EXPERIENCE	
Affected Resource	ANTICIPATED DIRECT AND INDIRECT IMPACTS
The refuge (Service-owned lands) is closed to all public uses (hunting, fishing, wildlife observation, wildlife photography, environmental education and environmental interpretation).	<p>No Action: The refuge will remain closed to all wildlife-dependent uses, including hunting. Therefore, no visitor conflicts are anticipated.</p> <p>Proposed Action: Because the refuge is currently closed to all other forms of public use, we do not expect to see an increase in the number of conflicts among user groups. The addition of gates preventing vehicles from accessing the refuge is likely to create some negative response from unauthorized user group. The new lands that are being opened have no infrastructure and users will be dispersed throughout large areas. If conflicts arise among user groups, efforts can be implanted to ensure the proposed action will not have significant impacts to other user groups.</p>

Table 4. Affected Cultural Resources and Anticipated Impacts of the Proposed Action and Any Alternatives

CULTURAL RESOURCES	
Affected Resource	ANTICIPATED DIRECT AND INDIRECT IMPACTS

<p>Cultural and Archeological resources: The Massachusetts Historical Commission (MHC) indicates one known site within the refuge boundaries that contains a single piece of chipping debris from an unknown period. The refuge has a long continual history of occupation by Native Americans. No formal archaeological survey has been completed for the Service portion of the refuge.</p> <p>Section 106 of the National Historic Preservation Act of 1966, as amended, requires the Service to evaluate the effects of any of its actions on cultural resources (historic, architectural and archeological properties) that are listed or eligible for listing in the National Register of Historic Places (NRHP). In accordance with the regulations under Section 106, the Service will consult with the State Historic Preservation Officer (SHPO) of Massachusetts as well as the local Tribal Historic Preservation Office (THPO).</p>	<p>No Action: No adverse impacts would occur under this alternative.</p> <p>Proposed Action: The Mashpee Wampanoag Tribe has historically and continues to use the refuge to practice their aboriginal activities, which includes, but is not limited to, hunting, fishing, collecting of medicinal plants and performing ceremonies. It is possible that the increased number of hunters utilizing these lands could create conflicts with tribal members, but since we do not anticipate high numbers of new hunters, this impact will be is anticipated to be low.</p> <p>No soil will be disturbed as a part of this alternative and the removal of cultural resources is prohibited; therefore, it is believed the proposed action would not affect any cultural resources found on the refuge. We expect that the ethical behavior of users and Service regulations would deter those individuals utilizing refuge land during the hunting season to remove or disturb any cultural resources.</p>
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Table 5. Affected Refuge Management and Operations and Anticipated Impacts of the Proposed Action and Any Alternatives

REFUGE MANAGEMENT & OPERATIONS	
Affected Resource	ANTICIPATED DIRECT AND INDIRECT IMPACTS
<p>Land Use: The refuge currently owns few roads, trails, and other</p>	<p>No Action: No adverse impacts would occur under this alternative.</p>

<p>infrastructure. The refuge plans to construct a small parking lot on Service-land from Red Brook Road and install 2 gates to eliminate vehicular access to the refuge. Hunters using upland areas of the refuge may park at the Town of Mashpee's Jehu Pond Conservation Area via Great Oak Road.</p>	<p>Proposed Action: The proposed action would open new areas of the refuge to hunting and these users would use existing infrastructure to access the refuge. The number of hunters using these newly opened areas is expected to be low, and we do not expect any conflicts among user groups in adjacent partner lands, crowding, or over-use of the refuge's infrastructure. While increased hunters are possible throughout the refuge, impacts to local public roads are expected to be negligible.</p>
<p>Administration There are currently 11 full time employee positions that oversee the Eastern MA NWR Complex, including Mashpee NWR. Management, law enforcement, biological, visitor services, and maintenance staff work together to ensure the refuge's hunt program is safe, successful, and biologically sound.</p>	<p>No Action: There are no annual costs associated with this action. However, there will still be costs associated with the development of planning documents and public outreach.</p> <p>Proposed Action: The proposed action would open additional refuge lands to hunting. The annual operating costs to administer the Mashpee hunt program, including salary, equipment, maintenance of sites, and communication with the public is approximately \$13,000. All funding used to support this program are from the refuge's annual operating budget. The initial cost to implement this hunt program will be higher due to the need for infrastructure improvements such as adding a parking lot, installing two gates, and installing kiosks and regulatory signs. There will also be increased costs associated with the development of all required planning documents and public outreach. The estimated cost to implement the proposed action is \$59,500.</p>

Table 6. Affected Socioeconomics and Anticipated Impacts of the Proposed Action and Any Alternatives

SOCIOECONOMICS	
Affected Environment	ANTICIPATED DIRECT AND INDIRECT IMPACTS
<p>Local and regional economies The abundance of conserved lands and recreational amenities offers residents and tourists opportunities unique to this area. Service lands are surrounded by public</p>	<p>No Action: This action will have no impact to the local economy.</p> <p>Proposed Action: While hunting visitation may increase due to increased opportunities, hunting on refuge lands will only account for a fraction of expenditures related to visitor use within the local community. Therefore, only a minor</p>

<p>conservation open to a variety of public uses such as, hiking, dog walking, horseback riding, bike riding and hunting. Recreational and commercial fin fishing and shell fishing and hunting are important activities that contribute to the economy in the area.</p> <p>The area surrounding the refuge experiences a high degree of land development from the increasing population and the demand for vacation and second homes. While development in this area is ubiquitous, large tracts of land have been set aside for public conservation, including both waterfront properties and woodlands.</p>	<p>beneficial economic impact is expected to result from the Proposed Action; however, it is anticipated to increase in comparison to the No Action Alternative.</p>
<p>ENVIRONMENTAL JUSTICE</p>	
<p>Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to identify and address any disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.</p>	<p>The Service has not identified any potential high and adverse environmental or human health impacts from this proposed action or any of the alternatives. The Service has identified no minority or low-income communities within the impact area. Minority or low income communities will not be disproportionately affected by any impacts from this proposed action or any of the alternatives.</p>
<p>INDIAN TRUST RESOURCES</p>	
<p>The refuge has a long continual history of occupation by Native Americans, specifically the Mashpee Wampanoag Tribe. The Tribe built and used the</p>	<p>No Action: This action will have no impact on Native American resources.</p> <p>Proposed Action: While allowing hunting on Service lands may increase visitation, it is expected to be low. There is the</p>

historical road to haul harvested hay from the southern wetlands on the Cape to the village at Sandwich for use by the Pilgrims. The Wampanoag tribe also historically used the lands within the refuge for hunting, fishing, gathering of food and medicinal plants, as well as for ceremonial purposes. Some of these uses still take place today within the refuge and on Service-owned lands. There are no known sensitive Native American archeological sites on Service lands.	slight chance that the increase in hunters will conflict with tribal members carrying out their Aboriginal rights on Service-owned lands, but the likelihood is low.
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Cumulative Impact Analysis

Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7).

For more information on the national cumulative impacts of the Service’s hunting and fishing program on the National Wildlife Refuge System, see “U.S. Fish and Wildlife Service, Cumulative Impacts Report 2019-2020 National Wildlife Refuge and National Fish Hatchery Proposed Hunting and Sport Fishing Openings (2019)”.

Table 7. Anticipated Cumulative Impacts of the Proposed Action and Any Alternatives

Other Past, Present, and Reasonably Foreseeable Activity Impacting Affected Environment	Descriptions of Anticipated Cumulative Impacts
Hunting Hunting occurs on public and private lands that are found adjacent to the refuge. Hunting is part of the culture on Cape Cod, Massachusetts. The refuge, along with neighboring partners, currently hosts events to try to connect people with nature and the outdoors.	Refuges, including Mashpee NWR, conduct refuge hunting programs within the framework of State and Federal regulations. The Commonwealth of Massachusetts sets hunting frameworks based on species’ populations and monitored harvests. The proposed hunting program rules will be the same as, or more restrictive than, hunting regulations throughout the State. By maintaining hunting regulations that are the same as or more restrictive than the State, we can ensure that we are maintaining seasons that are supportive of management on a more regional basis. Such an approach also provides consistency with large-scale population status and objectives.

At the local level, the refuge only adds slightly to the cumulative impacts on resident wildlife, and a negligible amount to regional and statewide populations.

Our estimates for annual hunt activity at Mashpee NWR are as follows, assuming an average of two hunters per day:

Species	Harvest	Hunt Visits
Deer	4	30
Waterfowl	25	20
Turkey	2	12
Small Game	1	10
Woodcock	0	0
Coyote	2	10

Migratory Birds- Waterfowl populations throughout the United States are managed through an administrative process known as flyways. The Mashpee refuge is located in the Atlantic Flyway. In North America, the process for establishing waterfowl hunting regulations is conducted annually. In addition, public hearings are held and the proposed regulations are published in the Federal Register to allow public comment.

Annual waterfowl assessments are based upon the distribution, abundance, and flight corridors of migratory birds. An Annual Waterfowl Population Status Report is produced each year and includes the most current breeding population and production information available for waterfowl in North America (USFWS 2018a). An Annual Adaptive Harvest Management Report (AHM) provides the most current data, analyses, and decision making protocols (USFWS 2018b). These reports are intended to aid the development of waterfowl harvest regulations in the United States for each hunting season.

Hunting on the refuge will not add significantly to the cumulative impacts of migratory waterfowl management on local, regional, or Atlantic Flyway waterfowl populations because the percentage likely to be taken on the refuge, though possibly additive to existing hunting takes, would be a tiny fraction of the estimated populations. In addition, overall populations will continue to be monitored and future harvests will be adjusted as needed under the existing flyway and state regulatory processes.

	<p>Several points support this conclusion: 1) the proportion of the national waterfowl harvest that occurs on National Wildlife Refuges is only 6 percent (USFWS 2013); 2) there are no waterfowl populations that exist wholly and exclusively on national wildlife refuges; 3) annual hunting regulations within the United States are established at levels consistent with the current population status; 4) refuges cannot permit more liberal seasons than provided for in Federal frameworks; and 5) refuges purchased with funds derived from the Federal Duck Stamp must limit hunting to 40 percent of the available area.</p> <p><i>Resident Wildlife</i>– Refuges, including Mashpee NWR, conduct hunting programs within the framework of State and Federal regulations. Hunting frameworks and take limits are set by the State. The proposed refuge hunting program rules will follow hunting regulations set by the State of Massachusetts with some changes. The refuge coordinates with the State about the hunting program.</p> <p>Wildlife management of populations is important to ensure the health of the ecosystem, and the refuge’s hunt program provides minor, additional beneficial impacts to the cumulative impacts of wildlife management in the State.</p>
<p>Development and Population Increase Massachusetts is the 14th most populated state in the United States. The population has continued to grow to the current population of about 6,859,000. Population growth will continue stress the ecosystems of Cape Cod, both through direct loss of remaining habitats, and indirectly through fragmentation and degradation of the Cape’s remaining parcels of wildlife habitat. Refuges and other tracts of habitats will become even more important as repositories of biodiversity.</p>	<p>Because the refuge uses an adaptive management approach for its hunt program, reviewing the hunt program annually and revising annually (if necessary), the Service’s hunt program can be adjusted to ensure that it does not contribute further to the cumulative impacts of population growth and development on non-game and game species.</p>

<p>Use of Lead Ammunition Lead ammunition is permitted in Massachusetts and on the refuge for all hunts, except migratory birds.</p>	<p>Opening Service-owned lands to hunting may increase the number of hunters in this area slightly thus increasing the amount of lead shot to the local landscape due to big game and small game hunting. This could result in localized accumulations of lead in some portions of the refuge, including small wooded wetlands. This accumulation of lead could incur negative impacts if it is consumed by wildlife, but the likelihood of that resulting in poisoning is low. The refuge will encourage voluntary use of non-lead ammunition when hunting on the refuge.</p>
<p>Climate Change Warming, whether it results from anthropogenic or natural sources, is expected to affect a variety of natural processes and associated resources. In particular, the localized effects of climate change are still a matter of much debate.</p>	<p>The refuge would use an adaptive management approach for its hunt program, reviewing the hunt program annually and revising annually (if necessary), the Service’s hunt program can be adjusted to ensure that it does not contribute further to the cumulative impacts of climate change on migratory wildlife.</p>

Monitoring

The Refuge will be adaptive in the harvest management under the hunt program. Refuge-specific hunting regulations may be altered to achieve species-specific harvest objectives in the future. Many game species populations are monitored by MassWildlife through field surveys and game harvest reports, which will provide an additional means for monitoring populations. The State has determined that populations of game species are at levels acceptable to support hunting and these assessments are reviewed and adjusted periodically.

Summary of Analysis

This EA briefly provides sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The term “significantly” as used in NEPA requires consideration of both the context of the action and the intensity of impacts. This section summarizes the findings and conclusions of the analyses above so that we may determine the significance of the impacts.

Table 8. Summary of Findings Table

Affected Environment	No Action Alternative	Proposed Action Alternative
Hunted Species	Minor, long-term impact (overpopulation of deer)	Negligible, short-term adverse impacts (migratory birds-including waterfowl, upland game, upland game birds and turkey); minor, long-term beneficial impacts (population control for hunted

Affected Environment	No Action Alternative	Proposed Action Alternative
		species which decreases potential for disease and/or famine)
Other Wildlife and Aquatic Species	No impact	Minor, short-term adverse impacts (disturbance)
Threatened and Endangered Species	No impact	Negligible, short-term adverse impacts (disturbance). Minor, long-term positive impact (from crow and other carnivores predation of shorebird eggs)
Vegetation	Minor, long-term impact (over browsing by overpopulation of deer)	Minor (clearing 1000 sq. ft. for parking area and short-term impacts (trampling) and soil erosion (boats)
Air Quality	No impact	Negligible, short-term adverse impacts (emissions)
Water Resources	No impact	Minor, short-term adverse impacts (boat emissions)
Wetlands	No impact	Negligible, short-term adverse impacts (trampling)
Cultural Resources	No impact	No adverse impacts
Visitor Use and Experience	No impact	Negligible, short-term impacts (temporary inconvenience)
Socioeconomics	No impact	Minor, long-term positive impacts (economic growth)
Refuge Management and Operations	No impact	Minor, long-term positive (providing opportunities) and negative (funding) impacts
Environmental Justice	No impact	No impact
Indian Trust Resources	No impact	No impact

No Action Alternative: There would be no additional costs to the refuge under this alternative. There would be no change to the current public use and wildlife management programs on the refuge. The refuge would not increase its impact on the economy and would not provide new hunting and access opportunities. This alternative has the least direct impacts of physical and

biological resources. In addition, this alternative would reduce not meet mandates under the Refuge System Administration Act and Secretarial Order 3356.

Proposed Action Alternative: This alternative is the Service’s proposed action because it offers the best opportunity for public hunting that would result in a minimal impact on physical and biological resources, while meeting the Service’s mandates under the Refuge System Administration Act and Secretarial Order 3356. The Service believes that hunting on the refuge will not have a significant impact on local or regional wildlife populations because the percentage likely to be harvested on the refuge, though possibly additive to existing hunting takes, would be a tiny fraction of the estimated populations. Additional hunting would not add more than slightly to the cumulative impacts to wildlife from hunting at the local or regional levels, and would only result in minor, negative impacts to wildlife populations.

List of Sources, Agencies and Persons Consulted:

Massachusetts Division of Fisheries and Wildlife - Jason Zimmer
Massachusetts Department of Conservation and Recreation: Adrian Bandoni
Waquoit Bay National Estuarine Research Reserve- James Rassman
Mashpee Wampanoag Tribal Council – Chuckie Green
Town of Mashpee Conservation Commission – Andrew McManus
Town of Falmouth Conservation Commission – Mark Kasprzyk
Orenda Wildlife Land Trust – Dick Boyden
Falmouth Rod and Gun Club – Tim Lynch
The Friends of Mashpee NWR – Nancy Church

List of Preparers:

U.S. Fish and Wildlife Service, Eastern Mass NWR Refuge Complex Staff
Linh Phu - Project Leader
Tom Eagle - Refuge Manager
Eileen McGourty - Wildlife Biologist

State Coordination:

The refuge has moved forward with developing this Hunting Plan and EA based upon earlier formal coordination with MassWildlife starting in 2014, as well as the intervening informal discussions. The results of this coordination are reflected in this plan. Eastern Massachusetts NWR Complex (Mashpee NWR) will continue to consult and coordinate with MassWildlife annually to maintain regulations and programs; as well as to monitor populations of proposed hunted species and to set harvest goals.

Tribal Consultation:

Email notification regarding the opening of Mashpee NWR to hunting was sent to Cedric Cromwell, Chairman of the Mashpee Wampanoag Tribal Council on January 16, 2019. A follow-up phone call was made on January 23, 2019 to Chuckie Green, Director of Natural Resources for the Mashpee Wampanoag Tribe, requesting a letter of support by February 15, 2019. Chuckie said he would draft a letter of support and work to get a signature from the Tribal Chairman.

Public Outreach:

The hunt plan, CD, and EA was made available to the public on April 5, 2019. A copy of the hunt package was available on the Refuge website and was sent to our partners including the Mashpee Wampanoag Tribe, State of Massachusetts, the Mashpee Conservation Commission, Falmouth Rod and Gun Club, and Waquoit Bay National Estuarine Research Reserve.

Determination:

This section will be filled out upon completion of any public comment period and at the time of finalization of the Environmental Assessment.

- ☐ The Service's action will not result in a significant impact on the quality of the human environment. See the attached **"Finding of No Significant Impact"**.
- ☐ The Service's action **may significantly affect** the quality of the human environment and the Service will prepare an Environmental Impact Statement.

Preparer Signature: _____ Date: _____

Name/Title/Organization: _____

Reviewer Signature: _____ Date: _____

Name/Title: _____

References:

Boerner, R. E. J., T. R. Lord, and J. C. Peterson. 1988. Prescribed burning in the oak–pine forest of the New Jersey Pine Barrens: effects on growth and nutrient dynamics of two *Quercus* species. *American Midland Naturalist* 120: 108–119. doi:10. 2307/2425891.

Gawler, S. C. 2008. Northeastern Terrestrial Wildlife Habitat Classification. Report to the Virginia Department of Game and Inland Fisheries on behalf of the Northeast Association of Fish and Wildlife Agencies and the National Fish and Wildlife Foundation. NatureServe, Boston, Massachusetts. 102 pp.

Golet, F., A. Calhoun, W. DeRagon, D. Lowry, and A. Gold. 1993. Ecology of Red Maple Swamps in the Glaciated Northeast: A Community Profile. Biological Report 12, United States Department of the Interior, Fish and Wildlife Service, Washington, D.C.

Gucker, C. L. 2007. *Pinus rigida*. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Accessed February 2019 at: <http://www.fs.fed.us/database/feis/>.

Massachusetts Division of Fisheries and Wildlife (MassWildlife). 2018a. Deer Harvest Data.

Accessed February 2019 at: <https://www.mass.gov/service-details/deer-harvest-data>.

Massachusetts Division of Fisheries and Wildlife (MassWildlife). 2018b. Learn about turkeys. Accessed February 2019 at: <https://www.mass.gov/service-details/learn-about-turkeys>.

Newton, R. 1988. Forested Wetlands of the Northwest, Environmental Institute Publication No 88–1. University of Massachusetts, Amherst, MA.

Natural Heritage and Endangered Species Program (NHESP). 2016. Classifications of Natural Communities of Massachusetts. Version 2.0. Division of Fisheries and Wildlife, Westborough, MA 01581. Accessed February 2019 at <https://www.mass.gov/files/documents/2016/08/tl/salt-marsh.pdf>.

Thompson, E. and E. Sorenson. 2000. Wetland, Woodland, Wildland: A Guide to the Natural Communities of Vermont. Nature Conservancy and Vermont Department of Fish and Wildlife, Waterbury, Vermont.

U.S. Fish and Wildlife Service (USFWS). 2013. Issuance of Annual Regulations Permitting the Hunting of Migratory Birds: Final Supplemental Environmental Impact Statement. Accessed February 2019 at <https://www.fws.gov/migratorybirds/pdf/policies-and-regulations/FSEISIssuanceofAnnualRegulations.pdf>.

U.S. Fish and Wildlife Service (USFWS). 2018a. Waterfowl: Population Status, 2018. USFWS. Accessed February 2019 at <https://www.fws.gov/migratorybirds/pdf/surveys-and-data/Population-status/Waterfowl/WaterfowlPopulationStatusReport18.pdf>.

U.S. Fish and Wildlife Service (USFWS). 2018b. Adaptive Harvest Management: 2018 Hunting Season. Accessed February 2019 at <https://www.fws.gov/migratorybirds/pdf/management/AHM/AHMReport2018.pdf>.

FINDING OF NO SIGNIFICANT IMPACT
ENVIRONMENTAL ASSESSMENT
HUNTING PLAN
MASHPEE NATIONAL WILDLIFE REFUGE
Barnstable County, Massachusetts

The U.S. Fish and Wildlife Service (Service) proposes to open Mashpee National Wildlife Refuge (NWR, refuge) to hunting. An Environmental Assessment (EA) was prepared in compliance with the National Environmental Policy Act (NEPA) to provide decision-making framework that: (1) explores a reasonable range of alternatives to meet project objectives; (2) evaluate potential issues and impacts to the refuge, resources and values; and (3) identifies mitigation measures to lessen the degree or extent of these impacts. The EA evaluated the effects associated with No Action and Proposed Action alternatives.

Selected Action

Proposed Action Alternative

The Service is proposing to open public hunting opportunities for big game, small game (excluding rabbits), furbearers, upland game birds, and migratory game birds on Service-owned lands in Mashpee NWR. Situated in Mashpee and Falmouth on Cape Cod, Massachusetts, the amount of total conserved lands through a unique partnership is planned to total 5,871 acres within an approved acquisition boundary. Since much of the proposed lands have already been protected, only a small percentage of land will be owned by the Service in fee title. Currently, 293 acres are in Service ownership, and we are proposing to open 290 acres for hunting opportunities. The conserved lands within the Mashpee NWR approved acquisition boundary are cooperatively managed through a Memorandum of Understanding with: Massachusetts Department of Fish and Wildlife (MassWildlife), Wampanoag Tribal Council, Massachusetts Department of Conservation and Recreation (DCR)/Waquoit Bay National Estuarine Research Reserve (WBNERR), Falmouth Rod and Gun Club, Town of Falmouth, Town of Mashpee, Orenda Wildlife Land Trust, and the Friends of Mashpee NWR. Mashpee NWR is one of eight refuges that comprise the Eastern Massachusetts NWR Complex (Refuge Complex), which is headquartered in Sudbury, Massachusetts.

Under the Proposed Action Alternative, the Service proposes to open hunting opportunities to the Bufflehead Bay and Conboy parcels of the refuge. The seasons, bag limits, and regulations will be consistent with those set by MassWildlife, except where noted. Hunters would also have to comply with additional refuge-specific regulations, including but not limited to those contained in 50 CFR Chapter 1, subchapter C. These regulations may be modified as conditions change or if refuge expansion continues/occurs. Under this alternative, the species identified within this hunting plan are the only legal species to be hunted on the refuge. Hunting of all other species is prohibited. Refuge hunting hours are one-half hour before sunrise to one-half hour after sunset, and we allow the use of dogs to retrieve game

The preferred alternative was selected over the other alternatives because:

The hunting program, along with all other management programs, relates directly to the overall mission of the Service. Additionally, the National Wildlife Refuge System (Refuge System) Improvement Act of 1997 identifies six priority public uses that are appropriate on national wildlife refuges, including hunting, fishing, wildlife observation, wildlife photography, and environmental interpretation and education.

Development and enhancement of a quality and biologically sound hunting program will provide the public with a high-quality recreational experience on refuge lands and increase opportunities and access for hunters, and better align with refuge habitat management objectives.

Other Alternatives Considered and Analyzed

No Action Alternative

Under this alternative, refuge lands would continue to be closed to all forms of hunting. Disadvantages of the no action alternative include not being able to promote a priority public use of the Refuge System. There would be no additional costs to the refuge under this alternative. There would be no change to the current public use and wildlife management programs on the refuge. The refuge would not increase its impact on the economy and would not provide new hunting and access opportunities. This alternative has the least direct impacts of physical and biological resources. In addition, this alternative would not meet mandates under the Refuge System Administration Act and Secretarial Order 3356.

Summary of Effects of Selected Action

Implementation of the agency's decision would be expected to result in the following environmental, social, and economic effects:

Affected Environment	No Action Alternative	Proposed Action Alternative
Hunted Species	Minor, long-term impact (overpopulation of deer)	Negligible, short-term adverse impacts (migratory birds-including waterfowl, upland game, upland game birds and turkey); minor, long-term beneficial impacts (population control for hunted species which decreases potential for disease and/or famine)
Other Wildlife and Aquatic Species	No impact	Minor, short-term adverse impacts (disturbance)
Threatened and Endangered Species	No impact	Negligible, short-term adverse impacts (disturbance). Minor, long-term positive impact (from crow and other carnivores predation of shorebird eggs)
Vegetation	Minor, long-term impact (over browsing by overpopulation of deer)	Minor (clearing 1,000 square feet for parking area and short-term impacts (trampling) and soil erosion (boats)

Affected Environment	No Action Alternative	Proposed Action Alternative
Air Quality	No impact	Negligible, short-term adverse impacts (emissions)
Water Resources	No impact	Minor, short-term adverse impacts (boat emissions)
Wetlands	No impact	Negligible, short-term adverse impacts (trampling)
Cultural Resources	No impact	No adverse impacts
Visitor Use and Experience	No impact	Negligible, short-term impacts (temporary inconvenience)
Socioeconomics	No impact	Minor, long-term positive impacts (economic growth)
Refuge Management and Operations	No impact	Minor, long-term positive (providing opportunities) and negative (funding) impacts
Environmental Justice	No impact	No impact
Indian Trust Resources	No impact	No impact

Measures to mitigate and/or minimize adverse effects have been incorporated into the proposal. These measures include:

- Refuge and State law enforcement officers enforce hunting regulations. Providing hunting information through various forums will ensure the public is aware of applicable laws and policies.
- To minimize conflict, refuge-specific hunt regulations and hunt unit maps (brochures) will be made available to hunters at kiosks, the refuge website and at the Refuge Complex Headquarters in Sudbury, Massachusetts.
- To help reduce interaction between hunters on the refuge and other user groups off the refuge, refuge boundaries and hunt area boundaries will be clearly posted.
- The refuge will be adaptive with harvest management under the hunt program. Refuge-specific hunting regulations may be altered to achieve species-specific harvest objectives in the future. Many game species populations are monitored by MassWildlife through field surveys and game harvest reports, which will provide an additional means for monitoring populations. The State has determined that populations of game species are at levels acceptable to support hunting and these assessments are reviewed and adjusted periodically.
- Access within refuge hunt units will be by foot only. Entry to the main refuge unit (Mashpee unit south of Red Brook Road) will be by Great Hay Road, which can be

accessed from Red Brook Road on the north, and Great Oak Road to the south. Parking will be provided on Red Brook Road as well as at the Town of Mashpee's Jehu Pond Conservation Area entrance at Great Oak Road. Hunter access and parking will not be permitted on Amy Brown Road, which is partially privately owned. Gates will be installed at the entrance on Red Brook Road and Amy Brown Road to eliminate vehicular access through the refuge.

- Access to the Falmouth (Conboy) unit will be through the adjacent MassWildlife property (Mashpee Pine Barrens). Since this parcel is land locked by private and other partner lands that are not open to hunting, the Service is unable to provide parking for this unit.
- No hunting of rabbits. New England cottontails (*Sylvilagus transitionalis*) have been documented and were once considered for listing under the Endangered Species Act. Due to range-wide conservation measures, the Service decided not to list the species. Nevertheless, the refuge has determined it prudent to not open the refuge to rabbit hunting at this time until local populations can be increased and accurately measured.

While refuges, by their nature, are unique areas protected for conservation of fish, wildlife and habitat, the proposed action will not have a significant impact on refuge resources and uses for several reasons:

- The Service works closely with the State to ensure healthy populations of the species for present and future generations of Americans;
- The action will result in beneficial impacts to the human environment, including the biodiversity and ecological integrity of the refuge, as well as the wildlife-dependent recreational opportunities and socioeconomics of the local economy, with only negligible adverse impacts to the human environment as discussed above;
- The adverse direct and indirect effects of the proposed action on air, water, soil, habitat, wildlife, aesthetic/visual resources, and wilderness values are expected to be minor and short-term. The benefits to long-term ecosystem health that these efforts will accomplish far outweigh any of the short-term adverse impacts discussed in this document;
- Refuge staff will monitor for impacts related to hunting;
- The action, along with proposed mitigation measures, will ensure that there is low danger to the health and safety of refuge staff, visitors, and the hunters themselves;
- The action is not in an ecologically sensitive area;
- The action will not impact any threatened or endangered species; or any federally designated critical habitat;
- The action will not impact any cultural or historical resources;

- The action will not impact any wilderness areas;
- There is no scientific controversy over the impacts of this action and the impacts of the proposed action are relatively certain;
- The proposal is not expected to have any significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988 because hunters must use established access points that will not be located near sensitive habitats.

The proposal is compatible with the purposes of the refuge and the mission of the Refuge System, and consistent with applicable laws and policies regarding the establishment of hunting on national wildlife refuges (see the Compatibility Determination (CD) (Appendix A of the Hunting Plan). Refuge-specific regulations promulgated in conjunction with this action will be finalized through the standard of the *Federal Register*, and published in Title 50 of the Code of Federal Regulations (50 CFR §32.40).

Public Review

The proposal has been thoroughly coordinated with all interested and/or affected parties. Parties contacted include:


- Massachusetts Division of Fisheries and Wildlife
- Massachusetts Department of Conservation and Recreation
- Waquoit Bay National Estuarine Research Reserve
- Mashpee Wampanoag Tribal Council
- Town of Mashpee Conservation Commission
- Town of Falmouth Conservation Commission
- Orenda Wildlife Land Trust
- Falmouth Rod and Gun Club
- The Friends of Mashpee NWR

The Mashpee Partnership was notified about our efforts to open up Mashpee NWR to hunting during a partners meeting held on November 14, 2018. The hunt plan, CD, and EA was made available to the public on April 5, 2019. A copy of the hunt package was available on the refuge website and was sent to our partners including the Mashpee Wampanoag Tribe, State of Massachusetts, the Mashpee Conservation Commission, Falmouth Rod and Gun Club, and Waquoit Bay National Estuarine Research Reserve. Press releases were sent to local media outlets, and the Cape Cod Times published the story on April 8, 2019. The public comment period was open from April 5 to May 10, 2019, and an Open House was held on May 2 at the Mashpee Town Hall (Waquoit Meeting Room).


The open house was attended by 13 people, of whom 4 were opposed and 9 supported the plan. We received 17 written comments (3 were received from the same address), of which 7 were primarily in support and 10 were opposed to hunting at Mashpee NWR. Those opposed to the plan cited that “Refuges” should not allow hunting and should be “sanctuaries” for animals, or were against any hunting in general. Two noted their safety concerns citing low law enforcement and hunter safety. After thorough review and consideration of all comments, we have determined that the potential adverse impacts to habitat and wildlife would be minor or negligible, and short-term. No substantive changes were made to the plan based on the comments.

Determination

Based upon a review and evaluation of the information contained in the EA as well as other documents and actions of record affiliated with this proposal, the Service has determined that the proposal to implement hunting on Mashpee NWR does not constitute a major Federal action significantly affecting the quality of the human environment under the meaning of Section 102 (2)(c) of the NEPA of 1969 (as amended). As such, an environmental impact statement is not required. An EA has been prepared in support of this finding and is available upon request to the U.S. Fish and Wildlife Service, Mashpee NWR.



Scott Kahan, Regional Chief
National Wildlife Refuge System
North Atlantic-Appalachian Region



Date

600

CA/EB, FWS

19-I-2988,

due
10/24/19

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Tom Eagle
Deputy Refuge Manager
Eastern MA NWR Complex

Telephone Number: (978) 579-4027

Date: September 24, 2019

- I. Region:** Northeast, Region 5
- II. Service Activity (Program):** NWRS, Mashpee NWR
- III. Pertinent Species and Habitat:**
- A. List species and/or their critical habitat within the action area:**
Northern Long-eared Bat (*Myotis septentrionalis*)
- B. Proposed species and/or proposed critical habitat within the action area:**
None
- C. Candidate species within the action area:**
None
- IV. Geographic area of station name and action:**
Opening of Mashpee NWR to white-tailed deer, wild turkey, small game, upland game birds, furbearers and migratory birds hunting.
- V. Location:**
- A. Ecoregion Number and Name:**
Eastern Broadleaf Forest (Oceanic) Province; 221 (R.G. Bailey, Ecoregions of the United States, 1995)
- B. County and State:**
Barnstable County, Massachusetts
- C. Section, township, and range (or latitude and longitude):**
41.6029, -70.5134
- D. Distance (miles) and direction to nearest town:**
The refuge is within the towns of Mashpee and Falmouth.
- E. Species/habitat occurrence:**
Northern long-eared bats have been documented on the refuge through the use of acoustic detectors, mist-netting, and radio telemetry. See Figure 1 for detection locations.

VI. Description of Proposed Action

Two hundred and ninety acres of the Mashpee NWR owned in fee-title by the Service will be opened to hunting of specific species as noted below. This area consists of two parcels, one in Mashpee, Massachusetts and the other in Falmouth, Massachusetts. The largest of the parcels is 284.4 acres and is known locally as the Bufflehead Bay parcel (Figure 3) and is located directly south of Red Brook Road in Mashpee and extends south toward Great Oak Road and Jehu Pond Conservation Area. The unit is also dissected by Great Hay Road. The second parcel known as the Conboy property is 5.5 acres located in the town of Falmouth at North Ockway Road, and is sandwiched between a parcel owned by Orenda Wildlife Land trust and MassWildlife's Mashpee Pine Barrens parcel (Figure 1). The Service-owned property is dominated by pitch pine-mixed oak woodlands. Other less dominant habitats consist of red maple swamps, scrub shrub wetlands, emergent saltmarsh and vernal pools.

Big Game Hunting

- White-tailed Deer
- Wild Turkey

White-tailed deer and turkey hunting is permitted on all 290 acres of the refuge as conditions exist and following specific state hunting regulations. Hunters will self-navigate to their location.

Small Game Hunting

- Squirrel
- *No rabbit hunting due to the presence of New England Cottontails, a species of conservation concern.*

The refuge will be open for small game (with the exception of rabbit) in accordance to specific Massachusetts State Regulations is permitted on all 290 acres of the refuge as hunting access, habitats, and conditions exist. Hunters will self-navigate to their location.

Migratory Game Bird Hunting

- We allow hunting of Sora rail, Virginia rail, Wilson's snipe, ducks, geese American coot and woodcock in accordance to specific Massachusetts State Regulations is permitted on all 290 acres of the refuge as hunting access, habitats, and conditions exist. Hunters will self-navigate to their location.

Upland Game Bird Hunting

- Pheasant
- Quail

- Ruffed Grouse
- Crow

The refuge will be open to all upland game bird; with no state stocking of pheasants; in accordance to specific Massachusetts State Regulations is permitted on all 290 acres of the refuge as hunting access, habitats, and conditions exists. Hunters will self-navigate to their location.

Furbearer

- Coyote, Fox, Raccoon, Opossum

The refuge will be open for furbearer hunting in accordance to specific Massachusetts State Regulations (with the exception of night hunting and baiting) is permitted on all 290 acres of the refuge as hunting access, habitats, and conditions exists. Hunters will self-navigate to their location.

The hunt program on Mashpee NWR will be in accordance with the Commonwealth of Massachusetts hunting rules and regulations for all game, Federal regulations in 50 CFR, and additional refuge-specific regulations. New hunting regulations would go into effect for the 2019/2020 season.

VII. Determination of Effects

A. Explanation of effects of the action on species and critical habitats in items III. A, B, and C:

The hunt area contains habitat used by the northern long-eared bat for roosting and foraging. Hunting activities may cause disturbance to roosting bats if roost trees are disturbed or used to erect stands; however, the likelihood of encountering roosting bats is extremely small. Noise is anticipated to be of short duration and unlikely to create a disturbance large enough to disrupt normal roosting behavior. Although there is some overlap at the beginning and termination of the hunting day (½ hour before sunrise to ½ hour after sunset), the majority of the hunting activity will occur when bats are not actively foraging (they are primarily returning to their roosts at that hour). There is also limited overlap between hunting seasons and the northern long-eared bat maternity and volant periods with only spring turkey and crow seasons occurring during that time. The majority of hunting seasons fall within the bats spring and fall migratory period or during winter when bats are hibernating and least active on the landscape.

B. Explanation of actions to be implemented to reduce adverse effects:

Northern long-eared bats may occur, but no actions will be taken to reduce effects. Due to the small number of permitted hunters, the small number of northern long-eared bats on the refuge, and the short duration that the two will overlap each year, disturbance is likely to occur on a very rare basis.

VIII. Effect determination and response requested:

A. Listed species/designated critical habitat:

Determination

No effect/no adverse modification

(species: _____)

Response Requested

___ Concurrence

May affect, but is not likely to adversely affect species/adversely modify critical habitat

(species: northern long-eared bat)

X Concurrence

May affect, and is likely to adversely affect species/adversely modify critical habitat

(species: _____)

___ Formal Consultation

B. Proposed species/proposed critical habitat:

Determination

No effect/no adverse modification

(species: _____)

Response Requested

___ Concurrence

Is likely to jeopardize proposed species/
Adversely modify proposed critical habitat

(species: _____)

___ Conference

C. Candidate species:

Determination

No effect

(species: _____)

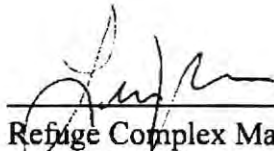
Response Requested

___ Concurrence

Is likely to jeopardize

(species: : _____)

___ Conference



Refuge Complex Manager
Eastern Massachusetts National Wildlife Refuge

9/24/19
Date

IX. Reviewing Ecological Services Office Evaluation:


A. Concurrence ✓ Non-concurrence _____

B. Formal consultation required _____

C. Conference required _____

D. Informal conference required _____

E. Remarks (attach additional pages as needed) _____



Supervisor, England Field Office

26 Sept 19
Date