# ENVIRONMENTAL ASSESSMENT
# FOR
# WHITE-TAILED DEER MANAGEMENT

## NINIGRET NATIONAL WILDLIFE REFUGE
## CHARLESTOWN, RHODE ISLAND

United States Department of the Interior
Fish and Wildlife Service
Rhode Island National Wildlife Refuge Complex
50 Bend Road, Charlestown, Rhode Island 02813

**White-tailed Deer Management Environmental Assessment**

**Ninigret National Wildlife Refuge**
**Charlestown, Rhode Island**

## Chapter 1: INTRODUCTION

### Purpose and Need for Action

The purpose of this proposed action is to evaluate how best to manage white-tailed deer (*Odocoileus virginianus*) on Ninigret National Wildlife Refuge located in the town of Charlestown, Washington County, Rhode Island (Figure 1).

The National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee (Refuge Administration Act) section 4(a)(4)(B) states that: "In administering the System, the Secretary shall...ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans..."

An overabundance of deer is threatening these components on the refuge. Dense populations of deer can alter plant and animal communities, including adversely affecting trust resources and species and habitats of concern (Tilghman 1989, DeCalesta 1994, Horsley et al. 2003). Deer exert pressure on their habitats primarily by their feeding habits. As most animals, they have preferred foods, therefore their impacts can be excessive on a few plant species, favor the nonpreferred plants and shift ecosystem dynamics. Refuge biologists have observed obvious browse lines, a lack of tree seedlings and spring ephemeral plants, the spread of nonnative, invasive plants and heavily browsed individual shrubs and other plants.

The current estimated deer density is approximately 24 deer per square mile on Ninigret NWR (Tefft 2011a). The overabundance of deer has likely been caused by the reduction in number of natural predators such as wolves and cougars, and the recent proliferation of habitat types that support white-tailed deer with highly palatable and nutritious food items (e.g., suburban gardens). Additionally, the elimination or reduction of hunting by humans has lifted a control of the population. A reduction of deer to densities of 12-15 per square mile would benefit natural resources and human health and safety (Tilghman 1989, DeCalesta 1994, DeNicola and Williams 2008, Kirkpatrick and LaBonte 2007).

Because of concerns related to high deer densities on these refuges, the Comprehensive Conservation Plan for Ninigret NWR, which specifies the long term direction and management for the refuge, calls for the development of a Deer Management Plan in order to meet refuge objectives (USFWS 2002). The purpose of this action is therefore also to meet this management objective.

### National Wildlife Refuge System Mission

The National Wildlife Refuge System's mission 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.

# Ninigret National Wildlife Refuge

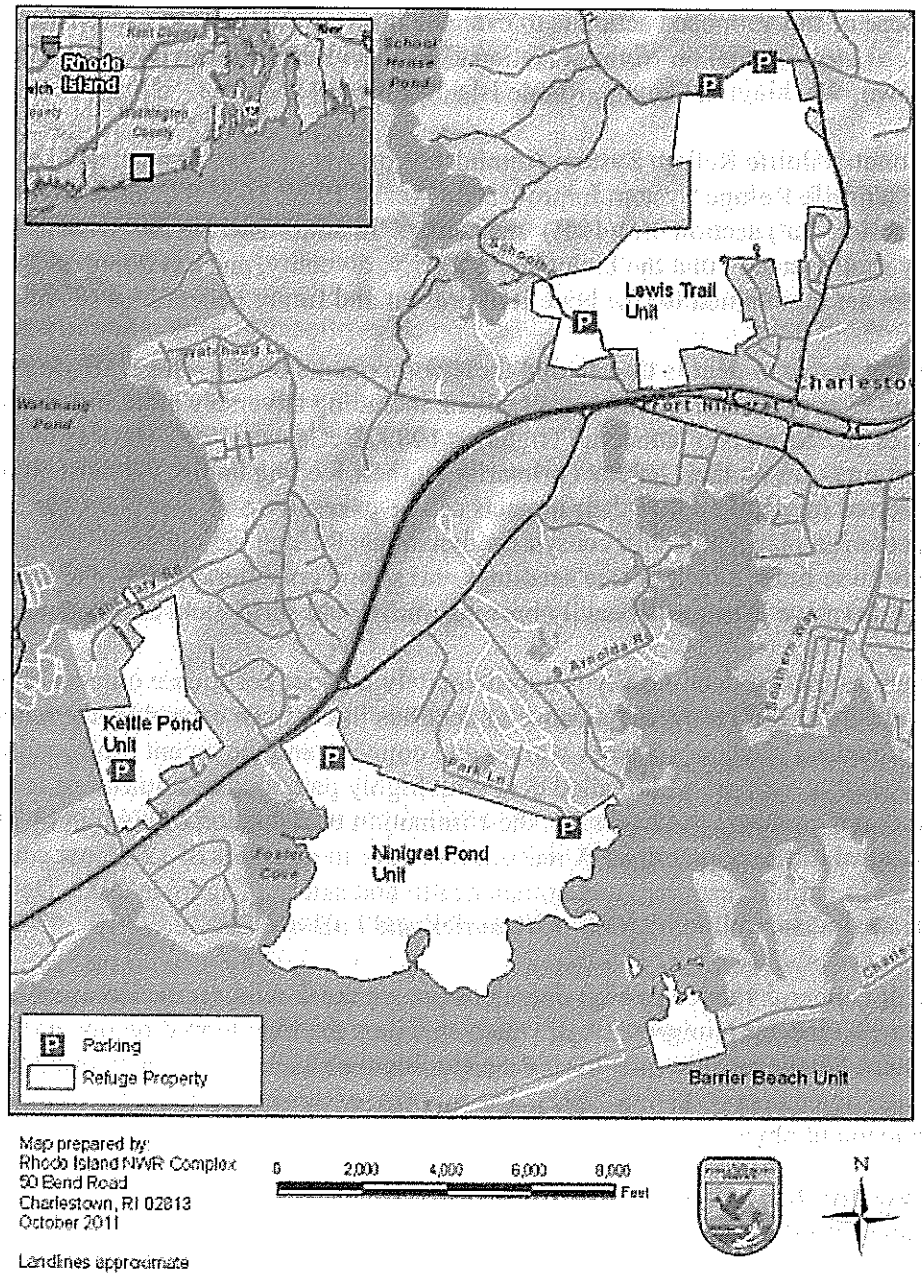


**Figure 1: Ninigret National Wildlife Refuge properties**

## Purposes of Ninigret National Wildlife Refuge

The Ninigret National Wildlife Refuge was established for the purposes of:
"... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds," (Migratory Bird Conservation Act of 1929); and

"... particular value in carrying out the national migratory bird management program" (Transfer of Certain Real Property for Conservation Purposes Act of 1972)

## Applicable Authorities and Direction

The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. §668dd et seq.) provides authority for the Service to manage the refuge and its wildlife populations. In addition, it declares that compatible wildlife-dependent public uses are legitimate and appropriate uses of the Refuge System and are to receive priority consideration in planning and management. Six wildlife-dependent public uses were identified in the law: hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation. The Improvement Act directs managers to increase recreational opportunities including hunting on national wildlife refuges when compatible with the purposes for which the refuge was established and the mission of the National Wildlife Refuge System. Management of Ninigret National Wildlife Refuge is guided by a Comprehensive Conservation Plan developed and approved in 2002 (USFWS 2002). Besides calling for the development of a Deer Management Plan, the following long range natural resource management goals were identified:

**Goal 1: Protect and enhance Federal trust resources and other species and habitats of special concern.**

At Ninigret NWR, special attention is given to fall-migrating songbirds, rare and endangered plants, maritime shrubland and grasslands.

**Goal 2: Maintain and/or restore natural ecological communities to promote healthy, functioning ecosystems.**

One of the main obstacles to achieving this goal is the establishment and spread of nonnative, invasive plants, which can alter natural ecosystem functioning.

## Regulatory Compliance

Concurrence on a Federal Consistency Determination from the State of Rhode Island, Coastal Resource Management Council was received. Intra-service consultation for compliance with the Endangered Species Act was received.

## Preparers and Reviewers

The Wildlife Biologist and Deputy Refuge Manager for the Rhode Island National Wildlife Refuge Complex prepared this Environmental Assessment. Reviewers included the refuge manager and subject matter specialists in the Service's Regional Headquarters located in Hadley, MA.

## Chapter 2: ISSUES, CONCERNS AND OPPORTUNITIES

### Public Involvement and Participation

A draft version of this Environmental Assessment and related documents were made available to the public for their comment and participation for a thirty (30) day public comment period beginning on November 8, 2011 and ending on December 7, 2011. Copies of this document were distributed to local libraries, and published on the Rhode Island National Wildlife Refuge Complex (RINWRC) website: http://www.fws.gov/ninigret/complex/index.html. In addition, two public workshops were held, one November 9, 2011 in New Shoreham, Rhode Island, and another on November 10, 2011 in Charlestown, Rhode Island. A news release alerting the public to the public comment period and public workshops was issued on October 30, 2011, and carried by local newspapers and several news outlets. Approximately 40 people attended one or the other of the workshops, and we received approximately 110 public comments. All public comments were evaluated and used in helping to identify the issues, concerns, and opportunities listed below. Some comments however were determined to be beyond the scope of this analysis. See Appendix 4 for our response to public comments.

### Issues, Concerns and Opportunities

Public comments and issues received during the comment period were evaluated and are addressed in this final Environmental Assessment. In addition, National Wildlife Refuge System staff, in consultation with local municipalities and species experts, identified concerns and opportunities to be addressed in evaluating the various management alternatives considered. In combination, the list of issues, concerns, and opportunities compiled for this Assessment are:

Issues and Concerns

*How will the alternatives affect the natural vegetative communities on the national wildlife refuge?*

An overabundance of deer can adversely affect natural communitie by their excessive browsing on native plants, resulting in reduced habitat productivity. Such browsing may hamper growth of some plant species, and result in their underrepresentation in the community.

*How will the alternatives affect public safety?*

Some alternatives consider the use of public hunting as a tool to help manage deer density. The use of weapons associated with hunters could pose a safety risk if handled improperly.

*How will the alternatives affect white-tailed deer populations?*

The deer management planning process seeks to maintain a deer population of 12-15 deer per square mile. The lower density would likely reduce ecological damage to important habitats;

slow the spread of nonnative, invasive plants; reduce deer/vehicle collisions; reduce the density of deer ticks and the incidence of Lyme and other tick-borne diseases; and decrease damage to Refuge neighbors' landscape plantings and gardens.

*How will species of concern, including Threatened and Endangered species, be affected?*

The goal of the deer management plan is to have the least impact possible on Threatened and Endangered Species. Any impacts to resident and migratory wildlife would be brief and infrequent. Rare plants would benefit from a comprehensive deer management program by reducing the browsing pressure on these populations. Without deer management, increasing deer densities would continue to place more browsing pressure on these plants, possibly impacting entire populations.

The New England cottontail (NEC), which is a species of concern and which may be reintroduced to the refuge, will not be adversely affected by deer management activities, including hunting.

*How will the alternatives influence the availability of other recreational opportunities on the refuges including wildlife viewing?*

We estimate that there are almost 100,000 recreational visits to the refuge each year from people participating in non-hunting-related recreational opportunities (3-year average, fiscal years 2009-2011, unpub. refuge data). An alternative that adopts hunting might reduce certain recreational opportunities while the hunt takes place.

*What will be the effects on migratory birds?*

Without a comprehensive deer management program, degradation of migratory songbird habitat will continue. The deer management planning process incorporates a reduction in deer populations, benefitting songbirds by improving native plant communities. Deer control methods may provide brief disturbance from feeding or resting.

*How will the town of Charlestown's Ninigret Park be affected?*

Presently, visitors to the park are able to hear gunshots from waterfowl hunting on Ninigret Pond. Any alternatives involving utilization of firearms may increase gunshots on certain dates. No other effects are expected.

*Is there an economic benefit to any of the alternatives?*

An alternative that incorporates hunting as a management tool will bring hunters to the area who will need lodging, food, fuel, and supplies.

*How do the cost of the Alternatives compare to each other and to alternatives that did not get in-depth consideration?*

Several options were researched that were prohibitively expensive including birth control/sterilization methods, and trapping and relocating. The alternatives proposed range in cost from nothing to over $8,000. In terms of non-monetary costs, or the cost to the environment, some alternatives are very costly as deer will continue to degrade the habitats. Others will benefit the native plant communities by reducing the pressure on them from overabundant deer.

*How will refuge neighbors be affected?*

Fewer deer in neighbors yards would have less impact on landscape plantings. Neighbors might hear more gunshots than they hear now, and there will be an increase of traffic on access roads. Reduction in the deer population may reduce the incidence of tick-borne disease as well as deer/vehicle collisions.

Opportunities

Reducing deer densities may reduce the abundance of deer ticks that harbor diseases, such as Lyme disease, which can affect public health.

Reducing deer densities may reduce vehicle collisions with deer.

Reducing deer densities may reduce damage to refuge neighbors' landscape plantings and gardens.

Deer management may increase the recreational opportunities offered to the hunting public as part of an overall deer management strategy.

## Chapter 3: ALTERNATIVES INCLUDING THE PROPOSED ACTION

Based on the issues, concerns and opportunities identified to date, refuge staff expertise, and consultation with those experienced in white-tailed deer management, the refuge identified a series of alternatives to consider in addressing management of white-tailed deer on Ninigret National Wildlife Refuge.

### Features Common to All Alternatives

Regardless of an alternative considered, there are minimum requirements to which all alternatives adhered:

1. All alternatives were subject to Inter-agency consultation to ensure all requirements of the Endangered Species Act are fulfilled.
2. Cultural resources will be protected, and no net loss of wetlands will occur.

### Options Considered but Eliminated from Further Study

The refuge identified several options to for deer population management. Upon analysis, some were eliminated from further consideration due to prohibitive cost, illegality in the State of Rhode Island, unfeasibility, or low chance of success. These options included birth control such as immunocontraception, steroidal implants, oral delivery of contraception; and sterilization; sharpshooting and live-trapping/relocation. See Appendix 1 for a thorough discussion of these options.

### Alternative A: No Action Alternative

No action means that no change from current management practices would occur. Management of white-tailed deer populations on Ninigret National Wildlife Refuge would not occur. Deer populations would be allowed to fluctuate on their own accord.

### Alternative B: White-tailed Deer Hunt - General State Regulations

This alternative would maximize the use of public hunting to help control deer populations and provide for maximum recreational hunting opportunities. Hunting would be allowed on all four units – Ninigret Pond, Kettle Pond, Lewis Trail and Barrier Beach (see Figure 2) - and would follow the seasons specified by the State of Rhode Island. Archery hunting would run from September 15 through January 31. Muzzleloader season would run from November 5 through November 27 and December 26 through January 1. Shotgun season would be from December 3 to December 11. Muzzle-loader and shotgun exact season dates may change slightly from year to year; however, the entire season for hunting, as defined by State regulations, runs from September 15 through January 31, most of which is restricted to archery. Archery, shotgun, and muzzleloader seasons would be incorporated on the specified. Refuge units would be closed to the non-hunting public, and hunter density would be limited during the hunting seasons to help ensure public safety.

The total annual cost of administering a refuge hunt program would be approximately $4,500. This amount is based on salaries for administrative and law enforcement personnel, creation and distribution of hunting information, permit fee administration, transportation, monitoring, signing, and other miscellaneous expenses.

### Alternative C: White-tailed Deer Hunt – Special Regulations (Preferred Alternative)

This is the Service's preferred alternative. This alternative would allow for limited deer hunting following special regulations restricting dates, weapons allowed, and hunter density. All dates fall within the State specified combined season of September 15- January 31. Special regulations are indicated by unit as follows (see Figure 2):

1. Ninigret Pond Unit- Muzzleloader and shotgun seasons will be established on an annual basis, with open season dates occurring during the months of November, December, and/or January. The length of the season is not likely to exceed a ten (10) day block of time, and would include weekends. For example, the proposed hunt season for 2012 would start the first Saturday after Thanksgiving and extend for ten days. Lottery permits would be given to successful applicants and hunters would be required to report harvest success.

# Ninigret National Wildlife Refuge (Hunt Map)

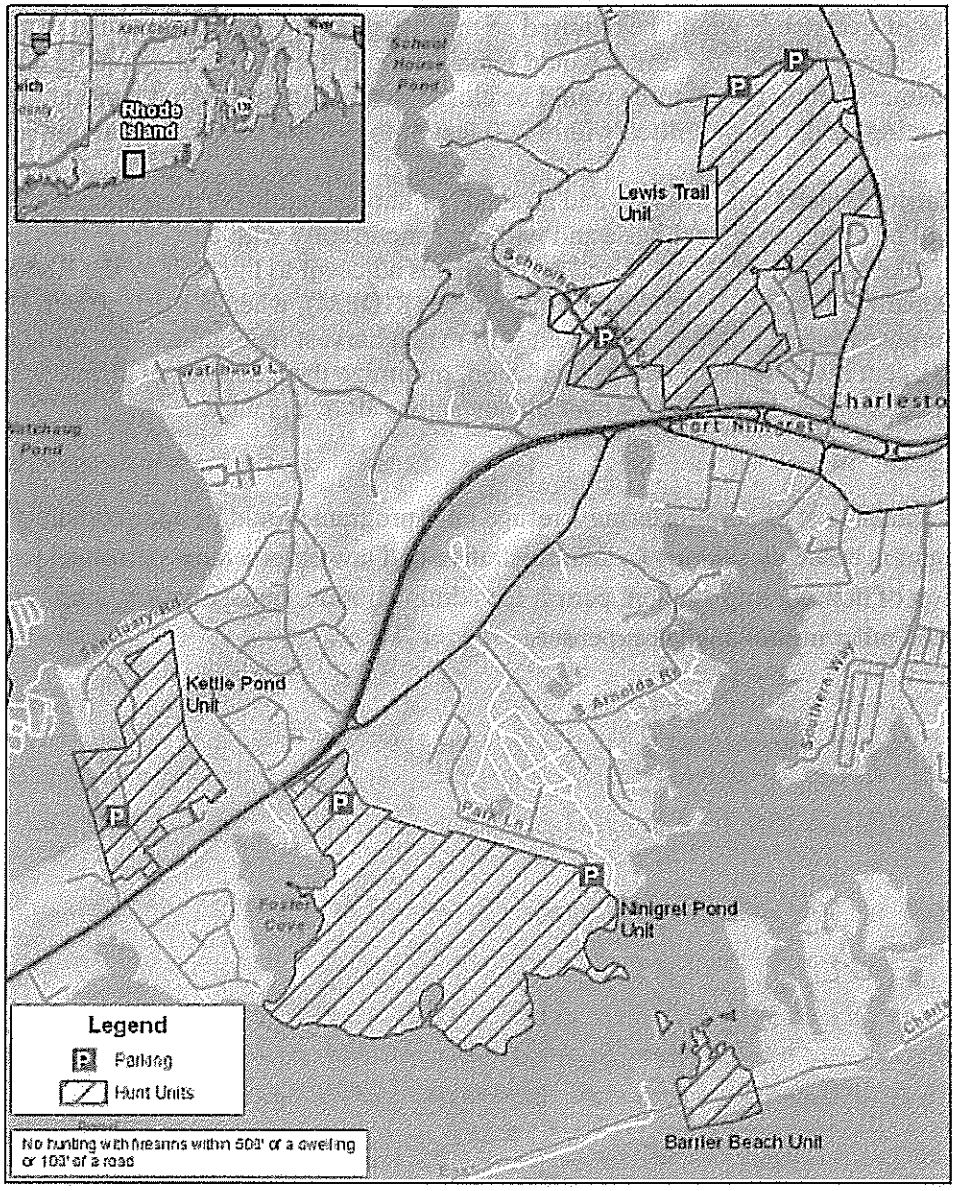


**Figure 2: Ninigret National Wildlife Refuge hunt units**

2. Lewis Trail Unit- Same as Ninigret Pond Unit.

3. Kettle Pond Unit- Archery hunting would be allowed during the month of January. The use of tree stands would be required so that the shooting of arrows results in a downward trajectory. The visitor center would remain open to the non-hunting public during normal business hours, but all trails would be closed to non-hunters during hunting times. No hunting would be permitted within 200 feet of the visitor center and parking lots.

4. Barrier Beach Unit- Seasons and methods of harvest (archery, muzzleloader, shotgun) will be set on an annual basis and will run concurrently with harvest seasons and methods of take established for State and private lands adjacent to this unit by the Rhode Island Department of Environmental Management (RIDEM), when consistent with Refuge purposes and objectives. The intent is to match harvest regulations with those applied to adjacent ownerships to reduce confusion, minimize the existence of different regulations in a hunt area, and allow for consistency across all ownerships.

The total annual cost of administering a refuge hunt program would be approximately $4,500. This amount is based on salaries for administrative and law enforcement personnel, creation and distribution of hunting information, permit fee administration, transportation, monitoring, signing, and other miscellaneous expenses.

## Chapter 4: AFFECTED ENVIRONMENTS

### Location

Ninigret NWR is located in Washington County, Rhode Island in the town of Charlestown. Ninigret Pond Unit is located south of Route 1 and abuts the town-owned Ninigret Park to the north and east. Ninigret Pond defines the western and southern boundaries of the unit. Kettle Pond Unit is located to the north of Route 1 on a glacial moraine. It is bordered by an Audubon Society property (Kimball Sanctuary) and a State Park (Burlingame) to the northwest. In the other directions lie private property. Lewis Trail Unit lies to the northeast of Kettle Pond Unit and is bordered to the northeast by The Nature Conservancy property, to the north and west by land owned by the Narragansett Indian Tribe, and by private property in the other directions. Barrier Beach Unit lies on a barrier beach with the Atlantic Ocean to the south, Ninigret Pond to the north and State conservation lands to the east and west.

### Topography and Soils

Most of the 858-acre refuge is located on a coastal outwash plain emanating from the base of the Charlestown moraine. The refuge area is typical of coastal sandplain characterized by relatively flat terrain and sandy soils derived from sorted silt, sand, and gravel that flowed out from glacial meltwaters. Most soils on the refuge are fine sand and silt loams in the Bridgehampton series and have very low levels of nutrients and organic matter. A high gravel content also characterizes refuge subsoil.

### Landscape Formation

The movement of glaciers across New England created the land forms seen in Rhode Island today. The last of those great ice sheets occurred during the Wisconsin glacial period. Approximately 15,000-20,000 years ago, the glacier was in a state of equilibrium, when the melting rate of ice equaled the glacial rate of movement (Bell 1985). As the climate warmed 12,000 - 15,000 years ago, the glacier began its retreat, depositing pronounced land forms along its outermost edge. The southern coast of Rhode Island, including Block Island,, is the farthest point the Wisconsin glacier reached in its southeastern frontal movement. The retreating glacier deposited rocks pushed by the front of its ice sheet in piles called moraines. These terminal or end moraines formed sinuous ridges up to 200 feet high.

A second prominent moraine lies inland, the low ridge referred to as the Charlestown or Watch Hill moraine, stretching east to west parallel to U.S. Route 1. Glacial action also created other features in today's landscape: recessional moraines, outwash plains, kettle hole ponds, glacial lake deposits, deltas, and submerged gravel shoals.

Melting ice sheets caused the sea to rise rapidly across Block Island and Rhode Island Sounds until it reached its present level approximately 4,000 years ago. Wave action parallel to the shore continued to erode glacial deposits, creating the barrier spits. As the spits formed, they almost entirely sealed off the low-lying areas between the headlands and the ocean, forming coastal lagoons connected to the sea by narrow inlets. These became the coastal salt ponds we see today, such as Ninigret Pond. Through the 1700's, all of the coastal salt ponds had direct, seasonally open connections to the ocean (RI CRMC 1998). The effects of erosion through time have shifted the salt ponds and barrier spits gradually landward (RI CRMC 1998).

The bedrock formations of southern Rhode Island include the Blackstone series of metamorphic rock along its southern coastal border (including most of Westerly, Charlestown and South Kingstown), granite rock of various ages (including most of Narragansett and Middletown and parts of Westerly and Charlestown), and Pennsylvanian sedimentary rock in most of south central Rhode Island (including Richmond, much of South Kingstown, and most of Hopkinton). Most of the soils around the refuges are fine sandy loams or silt loams.

## Historical Influences on Landscape Vegetation

The upland forests of southern Rhode Island are classified by Kuchler (1964) as oak-hickory forest; while most of northern Rhode Island is classified as oak-pitch pine forest. Historic land use practices promoted this forest type.

As early as 12,000 years ago, Native Americans began occupying the area. Documented evidence places the first intensive occupation of the salt pond region during the late Archaic period (5,000 to 3,000 years ago). Native American camps from more than 4,000 years ago are known to have existed at one location along the shore of Ninigret Pond. However, societies of that time were primarily hunter-gatherer with little agriculture; broad changes to landscape vegetation probably did not occur. During the Woodland Period (3,000 - 450 years ago), larger, semi-permanent or recurrently occupied camps became coastal settlements. Fortified villages are known to have existed in some locations. Maize horticulture became prominent,, which likely resulted in small clearings. Larger clearings and burnings to create early successional habitat to attract deer and upland birds may have occurred, as well as the first pronounced clearing of land along the coast for settlements, game management, and agriculture. Much of this land was cleared by cutting and burning, which favored resprouting by hardwood species like oak (*Quercus* sp.), hickory (*Carya* sp), and red maple (*Acer rubrum*).

The role fire may have played in shaping landscape vegetation is not well known. Evidence of fire has been observed in charcoal layers at Ninigret NWR. Soil cores dug at most points on the refuge reveal charcoal below the historic farmers' plow zone, approximately 10 inches soil depth. The dates attributed to these fires, coupled with their locations, suggest early Native Americans used fire extensively and purposefully.

Although small areas of land were cleared and more or less permanently settled by early Native Americans, it was European settlement and expansion in the 1600's that exponentially escalated the conversion of forests to agriculture. The eighteenth century Rhode Island plantation era "...required massive land clearing of the forests that had dominated the landscapes for the last 8,000 years" (USFWS 1999). During the mid-nineteenth century, an estimated 85% of southern New England was converted to field and pasture. Any woods remaining often were managed for firewood (Jorgensen 1977).

## Contemporary Influences on the Landscape

The major natural disturbances affecting the coastline today are hurricanes and winter ice-storms. Hurricanes have the greatest impact, by far. The straight border of barrier beaches separated from the mainland by tidal wetlands and coastal salt ponds characterizes a coastline influenced by frequent storms. Wind and waves pick up loose sand and sediment and move it along the shoreline or back out to sea, allowing occasional overwash of barrier beaches and

breaching of coastal ponds. Overwash, tidal currents, longshore currents, and rip currents are all mechanisms transporting sediment along the barrier beaches (RI CRMC 1998).

Fall and winter storms combining wind, rain, and waves are the predominant physical process shaping this landscape today. "Nor'easters," offshore storms that rotate counter-clockwise, thus creating winds that come from the northeast, are well known along the New England coast in winter. However, winds generated offshore from the southeast can actually be more destructive to the south shore, because of its exposure in that direction to the open ocean. The Salt Pond Region Special Area Management Plan describes the geologic, wave, and wind action for the South Shore, including details on how sediment movement constantly reshapes this dynamic landscape (RI CRMC 1998). The Great New England Hurricane of 1938 was the most recent 100-year storm, one of immense power along the coast. Not only did winds reach speeds up to 240 miles per hour, but also a spring high tide created a storm surge between 10 and 15 feet. Storms of this magnitude are suspected to have occurred only four other times in recorded history: 1635, 1683, 1815, and 1821 (Bell 1985). Smaller hurricanes are less powerful but more frequent than the hurricane of 1938. Hurricanes in 1944, 1954, 1955, 1960, 1976, and Hurricane Bob in 1991 each left its mark on the coastline.

Military installations directly impacted the landscapes at Ninigret NWR. From the 1940's through the 1960's, Ninigret NWR was a U.S. Naval Auxiliary Landing Field. More than 70 acres of forest and shrubland were cleared and maintained as asphalt runways and taxiways. Nonnative trees such as larch (*Larix laricina*) and autumn olive (*Elaeagnus umbellata*) were planted on the property.

Introducing nonnative, invasive plants, diverting or draining coastal wetlands for development, converting uplands for residential use, and spilling oil are other significant human impacts on the coastal landscape. Recent studies indicate that the greatest threats to Rhode Island's estuaries and coastal salt ponds are septic systems and road runoff (RI DEM 1996).

On Rhode Island's upland landscape, a combination of management and natural succession has allowed forests to make a comeback. The State Division of Forest Environment estimates that 300,000 acres of privately owned forest plus 45,000 acres of State-managed forest make up 45% of the State's land area. Their estimate places 80% of the privately owned forest in tracts from 1 to 10 acres in size that are difficult to manage as forest and are rapidly being converted to residential areas (RI DEM 1996).

### Hydrology and Water Quality

Most of Ninigret NWR has a very high water table (6'-10' below the surface). Military excavations created several ponds as a result. Most of these man-made ponds are small and fairly unproductive, with steep sides and gravel bottoms. No natural streams exist on the refuge. The Navy constructed a series of ditches designed to direct runoff from the runways into Ninigret Pond. These ditches are responsible for reducing the salinity in at least two salt marshes, allowing an invasive plant species, Phragmites (*Phragmites australis*), to take over these wetlands.

Some evidence suggests that the creation of runways and the resulting compaction of the underlying silt created a barrier impervious to water, causing runoff. After the recent removal of

asphalt runway, some ponds are still forming, indicating this compacted silt layer still exists, and might need to be broken through to prevent frost-heaving of newly planted native grasses.

## Vegetative Communities

*Wetlands*

Approximately 9% of Ninigret NWR is wetland, including salt marsh, small, man-made ponds, forested and scrub-shrub wetlands, and emergent wetlands with varying amounts of open water. Most natural freshwater wetlands on the refuge are glacial kettle holes. The refuge contains at least 13 permanent ponds. Some tidal ponds on its mainland portion have restricted tidal flow due to siltation, and have become increasingly fresh. Most of the salt marsh acreage exists on the barrier beach parcel. Unfortunately, most of the wetlands have diminished wildlife value because of the presence of Phragmites. The presence of Phragmites indicates a disturbed wetland, especially where the natural flushing of salt water has been altered, salinity has declined, or where sediment loading has occurred. The monotypic, virtually impenetrable stands of Phragmites choke out native plants, and provide little suitable food or cover for wildlife. Other dominant plants in the emergent freshwater wetlands are broad-leaved cattail (*Typha latifolia*), and a variety of sedges and rushes (*Juncus spp.*, *Eleocharis spp.*, *Scirpus spp.*). A portion of a red maple swamp lies on the western edge of the refuge. Several scrub-shrub wetlands are scattered throughout the area, dominated by buttonbush (*Cephalanthus occidentalis*), swamp rose (*Rosa palustris*), and swamp loosestrife (*Decodon verticillatus*).

*Buried wetlands*

Upon removal of the first segments of asphalt runway, evidence of several small wetlands, former vernal pools, were found buried under their gravel base. Aerial photographs in 1939 identified a total of five original wetland sites, which predate runway construction. At least two sites were located in 1997 by the presence of hydric soils and the remains of wetland seeds and plants. One of these wetlands had remnants of pinnate-leaved water milfoil (*Myriophyllum pinnatum*), a species that has not been reported in Rhode Island since 1913. Both sites have hydric soils about 40 inches below the surface and have scattered bulrush seeds and stems and other native wetland plant parts. Based on the 1939 aerial photographs, there appears to be at least one more site that remains buried underneath the runways.

*Grasslands*

The Rhode Island Natural Heritage Program identifies coastal sandplain grasslands as a globally rare community (G2 & G3) under its ranking system. Only remnant patches of these native grasslands exist on Ninigret NWR, and much of what remains is overgrown by shrubs and trees or dominated by forbs. Approximately 6% of the refuge currently consists of herbaceous vegetation dominated by switchgrass (*Panicum virgatum*) and rough-leaved goldenrod (*Solidago rugosa*).

*Shrublands*

Approximately 16% of the refuge is upland shrub habitat. Shrubland communities vary in height and composition but are usually dominated by northern arrowwood (*Viburnum dentatum*), sumacs (*Rhus spp.*), bayberry (*Myrica pensylvanica*), highbush blueberry (*Vaccinium corymbosum*), or shadbush (*Amelanchier canadensis*). Most shrubs average 9' to 12' tall. Nonnative, invasive plants such as Asian bittersweet (*Celastrus orbiculatus*) dominate

many acres and have affected upland areas by crowding out native trees and shrubs. Refuge staff are actively managing Ninigret Pond Unit to restore shrubland and increase species diversity to benefit both migratory birds and the New England cottontail (*Sylvilagus transitionalis*).

*Forests*
Forest comprises about 59% of the refuge. On forested refuge lands south of Route 1, red maple and black cherry (*Prunus serotina*) dominate upland forest cover, followed by eastern red cedar (*Juniperus virginiana*), quaking aspen (*Populus tremuloides*), and gray birch (*Betula populifolia*). Red maple dominates the forested wetlands. Some remnant pitch pine (*Pinus rigida*) is also found on the refuge. The oldest forest stands occur on the western edge of Ninigret Refuge and within an isolated peninsula near the shrub wetland in the center of the refuge. The two refuge units north of Route 1- Kettle Pond and Lewis Trail - are upland deciduous forest dominated by various oaks, hickory, and red maple, followed by eastern red cedar and white pine (*Pinus strobus*).

*Nonnative, Invasive Plants*
Intensive surveys have shown nonnative, invasive plants to be widespread on Ninigret NWR at varying densities. While some of these species provide cover and food for wildlife, their dominance of the landscape will ultimately decrease biodiversity on the refuge.

Asian bittersweet (*Celastrus orbiculatus*) and Phragmites are two of the most common invasive plants on the refuge. Autumn olive (*Elaegnus umbellata*) is also fairly common on the refuge, and was planted during the 1980's along the runways as wildlife food. This species occupies about 4 acres and continues its aggressive spread. Several species of nonnative honeysuckle (*Lonicera* sp.) are also found throughout refuge lands. Honeysuckles exist at lower densities than the other invasive species, and are found in more shaded areas.

## Wildlife Resources
The wide variety of habitats has contributed to the great diversity of birds found on Ninigret Refuge. Approximately 70 species are known to nest on the refuge. Recent mist-netting on refuge lands has shown that gray catbirds (*Dumetella carolinensis*), common yellowthroats (*Geothlypis trichas*), and red- winged blackbirds (*Agelaius phoeniceus*) are the most abundant nesting birds in the shrub community (Eddleman 1993; Wallace 1995; Paton 1996, 1997, 1998). Breeding Bird Survey data indicate that the refuge may have one of the highest densities of nesting yellow-breasted chat (*Icteria virens*) in Rhode Island (Enser 1992). Other birds using early successional shrub and grassland vegetation for nesting include white-eyed vireo (*Vireo griseus*), willow flycatcher (*Empidonax traillii*), prairie warbler (*Dendroica discolor*), and American woodcock (*Scolopax minor*).

Wintering birds present on the refuge include northern harrier (*Circus cyaneus*), short-eared owl (*Asio flammeus*), eastern bluebird (*Sialia sialis*), black-capped chickadee (*Poecile atricapilla*), tufted titmouse (*Baeolophus bicolor*), northern cardinal (*Cardinalis cardinalis*) and a variety of sparrows. Waterfowl include American black duck (*Anas rubripes*), mallard (*Anas platyrhynchos*), American wigeon (*Anas americana*), and green-winged teal (*Anas crecca*). Ninigret Pond is an important wintering area for bufflehead (*Bucephala albeola*), common goldeneye (*Bucephala clangula*), greater scaup (*Aythya marila*), and red-breasted merganser

(*Mergus serrator*).

Resident mammals include white-tailed deer (*Odocoileus virginianus*), red fox (*Vulpes vulpes*), gray squirrel (*Sciurus carolinensis)*, Eastern cottontail (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), coyote (*Canis latrans*), rodents and bats. A wide variety of snakes, turtles, and frogs and other reptiles and amphibians use the beach dunes, interdunal depressions, shrublands, maritime forest and wetlands. Invertebrates such as bees, beetles, butterflies and other insects as well as soil invertebrates are found in all habitats.

**White-tailed Deer**

RIDEM monitors deer populations and densities throughout the State. The estimated total deer population in Rhode Island is 15,000 (Tefft 2011a). There are few predators of deer since the extirpation of the wolf (*Canis* sp.) and mountain lion (*Puma concolor couguar)*and the reduction of bobcat (*Lynx rufus*) numbers. Vehicle collisions and hunting provide much of the population control (Tefft 2011a); however, occasional predation on fawns by fox and dogs is probable, and predation by coyote may be significant. Coyote packs have also been known to prey on adult deer. Coyote are a recent arrival to Rhode Island – the first one was documented in 1969 (RIDEM: http://www.dem.ri.gov/programs/bnatres/fishwild/pdf/coyotes.pdf). They were able to expand eastward from their historic range in the prairie regions of North America, in part, because of the eradication or drastic reduction of gray (*C. lupus*) and red wolves (*C. rufus*), their competitors, from the eastern states.

RIDEM, in 2011 (Tefft 2011a), estimated the deer density on Ninigret NWR at 24 deer per square mile. Based on the best available scientific information including RIDEM data and analysis (Brian Tefft 2011b), as well as examination of the relevant literature (Horsley et al. 2003, Kirkpatrick and LaBonte 2007, DeCalesta 1994, McShea and Rappole 2000, Stafford et al. 2003), the refuge has set a target density of 12-15 deer per square mile. The lower density would likely reduce ecological damage to important habitats; slow the spread of nonnative, invasive plants; reduce deer/vehicle collisions; reduce the density of deer ticks and the incidence of Lyme and other tick-borne diseases; and decrease damage to refuge neighbors' landscape plantings and gardens.

Côté et al. (2004) report dramatic impacts on natural ecosystems of deer feeding. Selective foraging by deer affects the growth and survival of many herbaceous, shrub and tree species. This, in turn, modifies patterns of relative abundance and vegetation dynamics. In forests, the effects of continued overbrowsing include reductions in species diversity and plant cover and a loss of understory in general with little regeneration of tree species, since seedlings are eaten (Tilghman 1989). Small spring ephemeral and early summer forest herbs, which can lose all of their leaves or flowers in a single bite and cannot regrow, are susceptible to deer browsing and have decreased numbers in overbrowsed forests (Augustine and McNaughton 1998, Augustine and DeCalesta 2003)

Tilghman (1989) demonstrated that high deer densities can reduce seedling tree species diversity and reduce the cover of blackberry (*Rubus* spp.) in hardwood forests. He recommended deer densities be keep at or below 18 deer/square mile. Horsley et al. (2003) found that high browsing pressure altered plant community development, with the presence of plant species that deer favored declining, and species that deer did not prefer increasing. The authors also found that

when deer densities are reduced to approximately 20 deer per square mile, the restoration of forest vegetation will begin. DeCastela (1994) found a decline in some songbird populations at deer densities of 20 deer/square mile, and some bird species were absent at deer densities of 65 deer/square mile.

Plants deter browsing by arming themselves with morphological or physical weapons (e.g. thorns) and chemical weapons, such as phytochemicals, that cause unpalatability to potential feeders. Many nonnative, invasive plants have these defenses and therefore are avoided by deer, thus increasing in size, abundance and area covered as other more palatable native plants are eaten. Additionally, certain native plants that are unpalatable are left unbrowsed and are proliferating altering the composition of the habitats.

Increased vehicle accident rates due to deer collisions are now a serious problem in the United States and other countries (Côté et al. 2004). High deer densities can increase the potential for deer-vehicle collisions. Deer collisions result in human deaths and injuries, and material damage to vehicles, not to mention often painful or slow deer deaths. In two years (2009 and 2010) a total of 87 collisions of vehicles with deer were reported for the town of Charlestown (Tefft 2011a). DeNicola and Williams (2008) found that the reduction of deer densities in suburban areas decreased the number of deer-vehicle collisions by 78%.

In general, the higher the population of deer in a particular area, the greater the tick density will be (Lastavica et al. 1989, Rand 2004, Stafford 2007). Of particular concern to humans are three diseases transmitted by ticks to people: Lyme disease, babesiosis, and ehrlichiosis (Krause et al. 2002). The number of human cases of Lyme disease is correlated with deer density (Telford III 2002; Wilson et al. 1988, 1990).

A reduction of deer densities in Mumford Cove, Connecticut resulted in a lower incidence rate of Lyme disease in humans (Kirkpatrick and LaBonte 2007). As more humans use areas frequented by deer, and without a decrease in the deer numbers, we would expect to see more cases of Lyme disease (but, see Jordan and Schulze 2005, Jordan et al. 2007, Ostfeld et al. 2007).

Technically, Ninigret NWR does not include Ninigret Pond, which is the only significant fish habitat. However, small ponds and seeps contain mummichugs (*Fundulus heteroclitus*), striped killifish (*Funduls majalis*) and sticklebacks (*Gasterosteus* sp).

## Threatened and Endangered Species

A unique rare plant site, containing eight species the State of Rhode Island considers rare or endangered, lies within the grassland habitat on Ninigret NWR. The rare species include colicroot (*Aletris farinosa*), slimspike three-awn (*Aristida longespica*), yellow-fringed orchids (*Platanthera ciliaris*), tall- and few-flowered nutrushes (*Scleria triglomerata, S. paucifolia*), marsh milkwort (*Polygala cruciata*), little ladies' tresses (*Spiranthes tuberosa*), and Indiangrass (*Sorgastrum nutans*) (Killingbeck et al. 1998).

Piping plover (*Charadrius melodus*), a federally threatened species, have nested either on the barrier beach portion of the refuge or on the adjacent Ninigret Conservation Area every year since 1993. Piping plover typically breed on beaches from April through July, and into August if they re-nest after losing an early clutch. Symbolic fencing and nest exclosures are put in

place each April. Fencing is taken down once chicks fledge, typically in August each year.

Least tern (*Sterna antillarium*), a State-listed threatened species, has also benefitted from and responded favorably to strategies to protect nesting piping plover because it nests in similar and/or adjacent habitat.

The federally threatened northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*) is no longer found on refuge properties, although it may be reintroduced. It occupies beach and dune areas.

The New England cottontail is in drastic decline throughout its range. The refuge has been working with partners to try to prevent it from being listed under the Endangered Species Act. NEC were last documented on Ninigret NWR in 2005. Ninigret NWR is ranked as the number one site for reintroduction by the NEC Captive Breeding Working Group, represented by six state wildlife agencies, USFWS and other partners, and may eventually receive captive-bred NEC for reintroduction into the wild. NEC are most often found in shrubland, thicket or young forest habitat.

At present, the refuge is actively managing habitat to support reintroduced NEC. Also, a large pen (100' x 500') has been built at Ninigret NWR and is now holding captive-bred NEC to acclimate them to wild conditions while protecting them from predation

## Cultural Resources

Ninigret NWR was the former home to Charlestown Naval Auxiliary Air Station, which was a satellite airfield to the nearby Quonset Naval Air Station. Former US President George Herbert Walker Bush trained in aviation here before going to Japan during World War II. The airport was used for the Navy Air Navigation Project, which developed and tested navigation aids and traffic control systems. It was host to a Carrier Aircraft Service Unit and later to a Night Aircraft Training Unit.

The runways were used for drag racing between 1958 and 1959. Transfers of land from the U.S. Navy to the Service established, then expanded the refuge. The refuge was established in 1972 two years after 27.5 acres of the Ninigret Pond barrier beach was transferred to the Service, The air station was disestablished in 1974 and in 1979, 316.4 acres of the Naval Landing Field was transferred to the refuge, followed by an additional 60 acres in 1982.

With the addition of two forested tracts north of Route 1, Kettle Pond and Lewis Trail Units, the refuge now comprises 858 acres. When the property became a refuge, most of the buildings were torn down. Later over 72 acres of runway was removed and seeded with native grasses. In 2011 hundreds of shrubs were planted to further restore the area. A portion of the old runway was preserved for visitors to see. Additionally, an interpretive trail with signage – the "Trail Through Time," presents the cultural and human history of the area.

The past military activities affected archeological resources at Ninigret NWR. Only a few areas have intact soils. Construction of the landing facility required massive earth moving, which would have impacted the integrity of many archeological sites. The intact areas are considered highly sensitive for archeological resources. Studies of these sites have been limited in area and

scope. Evidence of prior use of the area by Native Americans is divided into pre- and post-European contact.

Before European contact. The Woodland Period (3,000-450 B.P.) is well represented in Charlestown and there are documented sites from this cultural period within Ninigret NWR. Dense concentrations of cultural materials have been identified at the Foster Cove Site (RI 16 in Rhode Island archaeological files) located between Runway 4 and the eastern edge of Foster Cove. Lithic scatter has also been found between runways 4 and 35 (RI 20). In 2011, a Phase I archeological identification survey was conducted for the Ninigret NWR New England cottontail pen. During this survey, two chert flakes were found in two of the test pits indicating the area was lightly used as a "stone tool maintenance site" (Waller 2011).

After European Contact. A burial site for the Narragansett Indians was discovered during runway construction and was recorded with the Rhode Island Historic Preservation and Heritage Commission. Fort Ninigret is located just to the west of the refuge and was an important trading area for the Eastern Niantic Indians during the seventeenth century. Native American settlement sites have also been documented along Ninigret Pond where Native Americans exploited resources such as shellfish, game, fish and waterfowl.

## Recreation Resources

Ninigret NWR has maintained trails at Ninigret Pond and Kettle Pond Units, as well as a visitor center at Kettle Pond. These facilities receive an estimated annual visitation of almost 100,000 (3-year average, FY 2009-2011, USFWS unpub. data) for nature observation, nature photography, environmental education and interpretation. Ninigret Pond Unit, which abuts Ninigret Pond, is open to fishing year-round and is especially popular in May when cinder worms hatch and striped bass come in to feed on them. Kettle Pond also is home to a state-of-the-art green visitor center that is open from 10:00 a.m. to 4 p.m. daily, except for Thanksgiving and Christmas. Annual visitation to the visitor center alone is over 14,000 (3-year average, fiscal years 2009-2011, USFWS, unpublished data). Ninigret Pond Unit has a canoe/kayak launch by the east entrance. Lewis Trail Unit has no maintained trails.

The refuge keeps track of visitation on a monthly basis. Visitation numbers were estimated from three-year averages (fiscal years 2009-2011 USFWS, unpub. data). From September 15 through January 31, visitation to all units combined was approximately 22,150. About 3,600 of those visiting entered the visitor center. Ninigret Pond Unit receives about 4,194 visits each November. A third of that (representing a 10-day closure for hunting) is 1,398. Kettle Pond Unit finds about 124 people using the trails during the month of January, a third of that (representing a 10-day closure for hunting) is 41. During January there are an average of 469 visits to the visitor center.

Ninig.
1398
+ 41 Kettle
1439

? Lewis Trail Unit

## Socioeconomic Factors

Ninigret NWR is in the town of Charlestown, population 7,827 (2010 U.S. Census). However, it lies close to some of the largest population centers on the east coast. The New York City metropolitan area, with a population of 18.9 million, is 2.5 hours to the southeast. Metropolitan Boston - population 4.6 million - is 2 hours to the north. The city of Hartford, with a population of 125,000, is 1.5 hours to the northwest, and the city of Providence, population 178,000, is 45 minutes to the north (2010 U.S. Census).

In all the communities surrounding the refuges, travel and tourism and the services that support them contribute substantially to local economies. The main tourist season lasts from April through October, with peak activity during the summer months. Beaches and water-associated recreation are primary attractions for visitors with destinations along the Rhode Island coast. One of the greatest contributions by the refuge to the local economy comes from the value attributed to the preservation of open space (NPS 1992). An assessment conducted by the Fish and Wildlife Service found that for every dollar spent managing Ninigret NWR, over six dollars were returned to the local economy (USFWS 1997).

## Chapter 5: ENVIRONMENTAL CONSEQUENCES

### Effects Common to All Alternatives

None of the alternatives is expected to have any adverse effects on ecologically critical areas, historic/cultural/archaeological resources, air quality, fisheries resources, public health and safety, and water quality, including drinking water. No land use changes are expected. No hazardous wastes will be generated, transported, treated, stored, or disposed of as a result of the implementation of any of the alternatives. White-tailed deer hunting currently occurs on other national wildlife refuges. Thus, the alternatives will not present unknown or unique environmental risks. Any additional hunting on the refuge proposed in the future will have to be assessed for its effects on resources. Thus, the alternatives proposing hunting do not establish a precedent for future actions that will have significant effects on resources. None of the alternatives will lead to a violation of Federal, State, or local environmental laws. The effects of the alternatives on the quality of the human environment are not likely to be highly controversial.

Public Health and Safety

Each alternative would have similar effects or minimal to negligible effects on human health and safety, excluding the risk of tick-borne disease and the rate of deer/vehicle collisions, both of which are expected to be less under alternatives B and C. There is the potential for hypothermia, and firearms incidents, related to alternatives B and C. However, these potential concerns are no greater than found on hunting activities located off refuge lands. Additionally, many safety measures will be put in place, or are already required by State law, that will ensure public safety.

Cultural Resources

There are no known cultural resources that would be impacted by any of the proposed alternatives.

Impacts to Refuge Facilities (roads, trails, parking lots)

The Service defines facilities as, "real property that serves a particular function(s) such as buildings, roads, utilities, water control structures, raceways, etc." Under the proposed action, naturally surfaced roads/real property exists in the hunt area; however, the use of vehicles on refuge roads will be limited or prohibited, so no impact to refuge real property is anticipated as a result of the proposed action. The facilities most utilized by hunters are: roads, parking lots, and trails that are located on refuge and State property, and the barrier beach. Access to hunting areas will be on foot to minimize soil erosion and potential negative impacts. The use of All-terrain Vehicles will be prohibited.

### Alternative A: No Action Alternative

Disadvantages of the no action alternative include such potential negative long-term effects such no decrease or an increase in vehicle collisions with deer; an increased abundance and coverage of plants unpalatable to deer, especially certain nonnative, invasive plants; increased browsing pressure on native plants; and increased disease transmission to humans (e.g., Lyme disease). There will be no effect on refuge neighbors; and they will see no decrease in deer browsing in their yards and gardens.

There will be no direct effects on public safety and no influence on other recreation opportunities on the refuge. No species of concern will be affected, nor will any migratory bird species. There will be no cost associated with this alternative nor economic benefit to surrounding towns.

**Alternative B: White-tailed Deer Hunt - General State Regulations**
This alternative will permit one of the six priority public uses encouraged by HR 1420 (i.e., hunting) to occur on Ninigret NWR. Additionally, this alternative supports Ninigret NWR's approved Comprehensive Conservation Plan.

A deer hunt following general State regulations, including dates and weapons permitted, would reduce the density of deer, thus decreasing deer/vehicle collisions and the density of deer ticks. With fewer deer ticks, it is expected that the number of human cases of tick-borne disease would decrease. Browsing pressure on plants would decrease allowing plants preferred by deer to rebound. This includes native shrubs, tree seedlings and herbaceous forest understory plants. Plants unpalatable to deer, such as many nonnative, invasive plants, would find increased competition from native plants released from browsing pressure, and so their spread would be slowed, most likely. Additionally, spread of nonnative, invasive plants through deer consumption and excretion of seeds and fruits should be reduced (Williams and Ward, 2006). This would increase plant diversity.

It is possible that a reduced deer density would increase preferred habitat of the New England Cottontail (NEC); deer feed on the tender first-year shoots of raspberry, which provides dense cover for NEC after it matures. However, it is possible that NEC habitat will decrease, since nonnative plants may decrease. Many of the nonnative plants on the refuges provide dense cover, but research has not been completed on the nutritional value of natives versus nonnatives for NEC.

It is expected that this alternative would reduce the number of deer/vehicle collisions and the incidence of tick-borne disease in humans. Browsing pressure on neighbors' landscape plantings and gardens would likely be reduced.

There may be some minor effects on species of concern. At Ninigret Pond Unit, a location containing several rare plant species will be excluded from the hunt zone, as will any other areas identified as harboring species of concern in a concentrated area. It is likely some migratory bird, diurnal bat and insect species will be affected by hunter travel. In particular, during the height of fall migration staging and migration that falls within the hunt period (September 15 through October 31), migratory birds may be briefly disturbed as they attempt to forage or rest. This may include piping plovers and least terns at the Barrier Beach Unit. However, disturbances would be brief and transitory and no lasting effects are expected.

If NEC are reintroduced to Ninigret, it is expected that hunter activity will have no adverse effect on them. Because NEC prefer very dense thickets and shrubland, it is unlikely hunters will venture into this area. If a rabbit is disturbed by a hunter's passage through its range, it will be able to retreat into dense cover, curtailing foraging activities briefly.

A cost to the government would be incurred for this alternative – approximately $4,500. The area would benefit economically due to hunters' needs for food, lodging, fuel and miscellaneous supplies.

Migratory birds would both benefit and suffer from this alternative. Because part of the hunt season would overlap with fall songbird migration, birds may be disturbed while feeding or resting. The benefit would be from the positive effect on native shrubland habitat that a reduction of deer would cause. The birds feed on the berries produced by the native shrubs and find shelter in the foliage.

Neighbors would hear more gunshot under this alternative than they do at present from waterfowl hunting on Ninigret Pond. There would be more traffic to and from hunting access points. Neighbors would not be able to use the refuge trails for walking during the hunt.

The public would be informed of the hunt dates through public announcements in local papers and on the refuge website. Additionally, access points will be posted with information about the hunt and refuge neighbors whose property abuts refuge boundaries will receive letters to inform them about the hunt.

### Alternative C: White-tailed Deer Hunt – Special Regulations (Preferred Alternative)

This is the Service's preferred alternative. This alternative will also permit one of the six priority public uses encouraged by HR 1420 (i.e., hunting) to occur on Ninigret NWR. Additionally, this alternative supports Ninigret NWR's approved Comprehensive Conservation Plan.

The special regulations required by this alternative will result in a quality recreational experience. Hunters will know in advance which days and areas they are able to hunt. Open areas will be clearly marked, and a map showing all areas both open and closed will be published in the annual Hunting Regulations and Permit.

It is anticipated that a deer hunt following special regulations would have similar environmental consequences as alternative B, but to a lesser degree. For instance, alternative C will likely cull fewer deer from the herd than alternative B, since there would be fewer hunt days. There may be fewer disturbances to habitat and wildlife, if fewer people over fewer hunt days are involved. And, specifically, there will be few to no effects on migratory songbirds since the hunt dates fall after songbird migration.

Costs of administering the hunt would be approximately the same as alternative B. Any loss in revenue would be offset by fewer hours of work necessary to administer a shorter hunt. Economic benefits to the surrounding area would be less than with alternative B, because fewer hunters would be involved. Neighbors would hear gunshots on fewer days, and not at all near Kettle Pond Unit because only archery would be allowed.

### Comparison of the Consequences of the Alternatives

Table 1 provides a brief summary and comparison of anticipated effects from implementing the alternatives on the concerns and opportunities identified to date. The no action alternative would be the most simple to implement, but would likely have the least potential of meeting deer

management objectives. Alternative B would provide the greatest hunting opportunities, but would be the least likely alternative to allow for other recreational uses. Alternative C is not as effective as alternative B in meeting deer density objectives, but has a more limited impact on other recreational uses of the refuges.

## Cumulative Effects Analysis of the Proposed Action

### Impacts to Habitat

The positive impacts of a hunt and reduction of the deer herd under both alternatives B and C would include a greater diversity and abundance of native plants. The abundance and cover of nonnative, invasive plants would likely be decreased as their native competitors are removed from foraging pressure. It would be expected that mature forest stands would begin to host younger trees as more seedlings are able to survive. Tick abundance would decrease as would the incidence of tick-borne disease in humans. The minor damage done to plants and soils by hunters walking off of established trails would be offset by the removal of deer that would cause a much greater impact if not removed. Under the no action alternative, negative effects would accumulate in terms of degradation of plants and vegetative communities.

### Impacts to Migratory Birds

During any overlap with the end of fall migration of songbirds (beginning to mid-November) some birds might be temporarily disturbed as they rest or seek food to rebuild their energy reserves to continue their migrations. The hunt season begins weeks after all piping plovers and least terns typically have fledged, and thus no impact to these species is expected.

The benefit to migratory birds would be through an improved habitat, particularly maritime shrubland, which provides energy in the form of berries and shelter for migrants. Reduced deer browsing pressure on native plants is expected to improve the habitat, both in quantity as measured by numbers of plants and area covered, and quality, in terms of species diversity and plant vigor.

The cumulative effects of disturbance to migratory birds under the proposed action are expected to be negligible for the following reasons. The white-tailed deer hunting season would not coincide with the nesting season, thus there will be no long-term effects on reproduction Also, while brief disturbances to birds as they are feeding and resting might occur, they are unlikely to cause any short-term or long-term adverse effects.

### Impacts to Resident Wildlife

Other than to the deer, impacts on other wildlife are expected to be temporary and cause little harm, especially since the hunt season will begin after most cold-blooded species have gone into hibernation or estivation for the winter. Hunters travelling off-trail may briefly disturb a variety of animals, particularly birds and mammals. Except for migratory birds and some species of migratory bats, butterflies and moths, these species have very limited home ranges and hunting could not affect their populations regionally; thus, only local effects will be discussed.

In addition, temporary displacement of resident wildlife may occur when hunters are entering and leaving the hunt areas. However, disturbance to birds by hunters would probably be commensurate with that caused by non-consumptive users, and effects are expected to be minor.

Regional and flyway effects would not be applicable to species that do not migrate such as most

woodpecker species, and some songbirds including Northern cardinal, tufted titmouse, chickadees, etc.

The cumulative effects of disturbance to non-hunted species under the no action alternative are none. Under alternatives B and C the cumulative effects are expected to be negligible for the following reasons. Small mammals, including bats, are inactive during winter when much of the hunting season occurs. These species are also nocturnal. Both of these qualities make hunter interactions with small mammals very rare. Hibernation or torpor by cold-blood reptiles and amphibians also limits their activity during the hunting season when temperatures are low.

| Table 1. Summary Comparison of Consequences by Alternative Considered (score -3 to 3) | | | |
|---|---|---|---|
| **Concern or Opportunity** | **Alternative** | | |
| | No Action | Alternative B - Deer Hunt following State Regulations | Alternative C - Deer Hunt following Special Refuge Regulations (Preferred) |
| Meet deer population goals | -3 | +2 | +1 |
| Promote and restore ecological health of vegetative communities | -2 | +2 | +1 |
| Impacts on other recreational uses | 0 | -3 | -1 |
| Increase deer hunting recreation opportunities as a part of a deer management strategy | 0 | +3 | +2 |
| Reduce incidence of tick borne disease, decrease deer/vehicle collisions, and reduce damage to residents' landscape plantings | 0 to -1 | +2 | +1 |
| Damage or disturbance to plants & wildlife including endangered species & species of concern | 0 | -1 | 0 |
| Monetary cost | 0 | -1 | -1 |
| Economic benefit | 0 | +2 | +1 |
| Public safety issues | 0 | -2 | -1 |
| Impact on refuge neighbors | 0 | -2 | -1 |
| **TOTALS** | **-6 to -5** | **2** | **2** |

Table 1: Each alternative is evaluated for its effects on identified concerns or opportunities. Higher scores address the concern more effectively. A score of zero reflects no effect.

Hunters would rarely encounter reptiles and amphibians during most of the hunting season. Encounters with reptiles and amphibians in the early fall are few and should not have cumulative negative effects on their populations. Invertebrates are also not active during cold weather and would have few interactions with hunters during the latter part of the hunting season. Refuge regulations further mitigate possible disturbance by hunters to non-hunted wildlife.

**Impacts to White-tailed Deer**

Under alternative A there would be no impact to white-tailed deer. Deer may continue to migrate to and from refuge properties causing deer/vehicle collisions and possibly increasing the density of deer in neighboring properties. No change in the damage to refuge ecosystems and vegetation would happen, in fact, it might increase, and the degradation of natural habitat would continue and would accumulate effects over the years.

Alternatives B and C would cause a reduction in the deer population that would have both ecological and cultural benefits. Fewer deer would mean less foraging on native vegetation and would allow natural ecosystems and vegetative communities to recover. Deer foraging exerts a strong influence on vegetative community dynamics as they have preferred foods, including the tender buds and shoots of many native plants. They are particularly damaging to plants whose reproductive potential (flowers, seeds, and fruits) can be destroyed in one bite, such as forest spring ephemerals. Their foraging allows non-preferred or unpalatable plants to prosper so that there are more invasive plants and certain natives, such as hay-scented ferns, that are unpalatable. With a reduction in the numbers of deer, it is expected that many of the preferred food plants of deer will make a recovery in number and range and that nonnative invasive plants may see a decrease in abundance, cover or vigor.

In terms of cultural benefits, a reduction in deer would decrease deer/vehicle impacts, cases of Lyme and other tick-borne disease in humans and foraging pressure on suburban yards and gardens.

The goal of deer management at Ninigret NWR is to maintain deer at a density that promotes ecosystem and herd health, reduces cultural impacts, and allows for deer in the refuge at a sustainable level. Thus, the density will be monitored (as has been the case for many years) annually by RIDEM and hunt regulations modified to maintain a density of 12-15 deer per square mile.

**Impacts to Threatened and Endangered Species**

None of the alternatives is expected to have impacts on threatened and endangered species. It is not expected that piping plover and least tern will be present along the beaches of Barrier Beach Unit during the hunt season since they will have departed for their wintering grounds. The Ninigret Endangered Species Area, home to eight State-listed endangered or rare plant species will be excluded from the hunting areas under both alternative B and C, thus no impacts are expected. In fact, the reduction of deer expected under Alternatives B and C, may benefit these plants as foraging pressure is lifted.

New England Cottontail rabbits are most often found in shrubland, thicket or young forest habitat with stem densities so thick that it is difficult for people to walk through them. Because

of this, it is likely that few hunters will venture into NEC habitat, and that NEC will be able to easily retreat into safe habitat if disturbed in more open areas. NEC may be interrupted from foraging or resting for a short time, if a hunter passes near them.

**Impacts to Refuge Environment and Community**
Under alternative A, there would be no change in the refuge environment and community. There would be a slight impact to the physical environment related to increased off-trail foot traffic under alternatives B and C which would cause some minor effects on soils and plants from trampling. None of the alternatives would have an impact on air quality or water quality. Under alternative B, all units would experience an impact on solitude in neighboring lands due to the sounds of firearms discharge. Under alternative C, there would be no impact on solitude around the Kettle Pond Unit since only archery will be permitted. Other areas will experience this impact for only 9 or 10 days during the year. There would be no cutting of vegetation or use of spikes or nails in trees allowed; thus no physical harm to plants except from walking. It is expected that alternatives B and C will cause some negative impact on the human community as community members will not be able to visit the refuge during the dates of the hunt. Neighbors will hear the sounds of gunshot, which may disturb some people. Both of these impacts will be less under the preferred alternative (alternative C). Based on the refuge's planned maximum hunter density of 1 hunter per 20 acres of huntable land under alternative C, there may be a maximum of 30 hunters per day. Hunters will bring revenue to the town through purchase of food, gas, supplies and hotel stays.

**Impacts to Wildlife-Dependent Recreation**
No impacts are expected under the no action alternative.

Under alternatives B and C, during the duration of the hunt period trails within and near the hunt zones will be closed to all visitors except hunters, as will the Ninigret Pond canoe/kayak launch, to ensure visitor safety. Education programs would not be conducted outdoors during hunt periods. Under alternative B, the Kettle Pond Visitor Center would be closed. Under alternative C, it will remain open; however, it is anticipated that some visitors will choose not to visit it during the hunting period at the Kettle Pond tract due to perceived risk. Signage will go up at the entrance to the Kettle Pond Unit and in the parking lots informing the public of the hunt and that the trails are closed. This would probably discourage many visitors from entering at all, even to go to the visitor center, especially those with small children or those who dislike hunting.

It is expected that visitors will go to alternative conservation or recreation areas during the times of the hunts. These include: Burlingame State Park, Kimball Audubon Sanctuary, and Trustom Pond NWR. These places may experience higher visitation during the months of hunting under alternative B or days of hunting under alternative C.

Refuge programs will be affected, as outdoor programs at Ninigret NWR will cease or be relocated to another refuge. This will cause major schedule changes under alternative B and school groups would be affected. Under alternative C, little change in programming is anticipated, because of both the short duration of the hunts and the times of year they would be scheduled.

## Chapter 6: CONSULTATION AND COORDINATION WITH OTHERS

The following entities were consulted in preparation of this Environmental Assessment:

Narragansett Indian Tribe
Charlestown, RI

State of Rhode Island
Department of Environmental Management
Division of Fish and Wildlife

Town of Charlestown
Charlestown, RI

United States Department of Agriculture
Wildlife Services

United States Fish and Wildlife Service
Ecological Services Division

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## APPENDICES

### APPENDIX 1: Deer management options considered and eliminated from further study

### Reproductive Intervention (Birth Control)

Birth control is best used on a limited-size and range herd where 70-90% of does are treated. In areas where immigration from outside the treatment area is likely, birth control benefits will diminish over time as new does come into the herd. Birth control is best done following a diminishment of herd size to the desired population, as it only decreases the number of births to maintain a particular herd size. Reproductive intervention was eliminated as an option because of the following reasons:

1) Ninigret NWR deer are not limited in range – boundaries are open for immigration from surrounding areas. Thus, any birth control would have to be done on an annual basis to ensure that 70-90% of does were sterile.

2) To continue birth control on an annual basis is cost-prohibitive.

3) Some of the options are illegal.

**Immunocontraception**

The most commonly used method of inducing infertility in deer is by immunocontraception, in which the deer is immunized against a protein or hormone needed for reproduction (Miller et al. 2004). It is estimated that 70-90% of does must be treated to effectively limit population growth (Hobbs et al 2000; Rudolph et al 2000; Swihart and DeNicola 1995; Walter et al 2002).

Traditional immunocontraceptive research in mammals has concentrated on the use of a vaccine extracted from the ovaries of pigs, called porcine zona pellucida or PZP (Miller et al. 1999). When this vaccine is injected into a doe, her immune system forms antibodies against the PZP. These PZP antibodies also recognize and attack the doe's own deer zona pellucida. After the doe ovulates, the PZP antibodies attach to her ovum and block fertilization (Warren 2000), which causes the female to experience multiple estrous cycles and extends the breeding season. An extended breeding season will increase deer activity at a time of year when conservation of calories is important, and may result in increased winter mortality. Lengthened breeding activity of bucks may also lead to an increase in the number of deer–vehicle collisions (Miller et al. 2004). The original PZP vaccines required an initial dose followed by a booster dose, and annual vaccines thereafter. The need for annual vaccinations is a significant drawback to the PZP vaccine. A new formulation of PZP, called SpayVac™, developed by ImmunoVaccine Technologies Inc., is a single-dose immunocontraceptive vaccine that has been shown to control fertility in female deer for multiple years.

The United States Department of Agriculture, National Wildlife Research Center developed a new gonadotropin-releasing hormone (GnRH) immunocontraceptive vaccine, named GonaCon™ which was registered with the Environmental Protection Agency for use in female white-tailed deer in September 2009.This product is labeled for use in urban/suburban areas where these species are overabundant.

GnRH vaccines have an advantage over PZP because they prevent eggs from being released from the ovaries, thereby eliminating multiple estrus cycles. Recent studies demonstrated the efficacy of the single-shot GnRH vaccine as a contraceptive agent for up to four years (Miller and Killian 2000). Ongoing studies are examining the effectiveness and practicality of administering GonaCon™ to free-ranging white-tailed deer. Preliminary results using free-ranging deer have provided poor results.

An adjuvant is a compound that improves the immune response, causing higher levels of antibodies. Freund's Complete Adjuvant (FCA) was combined with PZP to form the original vaccine. FCA has been popular with immunologists because it is very effective with all types of antigens. The United States Food and Drug Administration (USFDA) objected to the use of Freund's Adjuvant due to concerns related to target animal safety and human consumption. Because of these concerns, the United States Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) National Wildlife Research Center began testing Johne's vaccine as a replacement for Freund's adjuvant. Mycopar™ is approved for use in food animals and is therefore not a concern for use in deer (Miller et al. 2004).

A new adjuvant, AdjuVac™, contains a small quantity of Mycobacterium (as does Freund's complete adjuvant), which is a bacterium found in many species of domesticated and wild animals. The combination of AdjuVac™ adjuvant and GnRH conjugate produces a much longer-lasting contraceptive effect than was produced by earlier efforts that combined Freund's adjuvant with the same GnRH conjugate. GnRH and PZP vaccines have been classified by the USFDA as investigational drugs and may only be used in rigidly controlled research studies. GonaCon™ is the only EPA-registered multi-year, single-injection wildlife contraceptive for female white-tailed deer population control. It also has to be registered in a state and must be administered by a USDA or state game and fish department staff member, who captures, tranquilizes and injects deer one by one. So far, only Maryland and New Jersey have approved it for use within their borders.

In conclusion, fertility control may have value for use on small insular deer populations under carefully regulated conditions, but will not provide an alternative to hunting for the control of free-ranging herds (Kirkpatrick and Turner 1988). Although effective fertility control agents have been identified, their use on large free-ranging herds would be impractical and ineffective, and in some cases, such as with GonaCon,™ illegal. Because fertility control has no short-term effect on population size, pre- or post-treatment culling will be an essential part of the timely resolution of deer problems with fertility control agents.

**Steroidal Implants**

Implants containing a synthetic steroid hormone and placed under the skin can block fertility in deer for 1-2 years. Use of synthetic steroid hormones in free-ranging deer may affect non-target species (including humans) that consume meat from treated deer. Currently, no synthetic steroid hormones have been approved or registered by Federal or State agencies for routine use in free-ranging deer.

### Oral Delivery of Contraceptives

Research has shown that orally administered, synthetic steroid hormones can inhibit ovulation in female deer, but in practice these are not feasible because they require daily oral exposure.

### Sterilization

The method of sterilization involves the permanent loss of fertility to an individual doe. Better known as "surgical" sterilization, this method requires a certified veterinarian to remove the ovaries. This method is valuable because it is permanent; however, removal of the ovaries alters the way the female behaves. There is a second form of sterilization that involves a ligation of the oviduct. This method does not alter female behavior, but does increase the amount of time she cycles per season. This method is very effective for the animal undergoing the procedure, but is also very expensive and puts a lot of stress on the animal. Costs for sterilization range up to about $200 per deer; however, initial costs to capture deer can be thousands of dollars. Additionally, uncaptured deer and new immigrants will have offspring that mature into reproductively-capable adults, and will need to be captured and sterilized in future years to ensure the herd size is kept at the desired number.

## Sharpshooting

Sharpshooting involves the hiring of professionals who bait locations and shoot deer at the bait. On Ninigret NWR, the present estimated density of deer is 24 per square mile (Tefft 2011a) and the desired density is half that, or 12 deer per square mile.

Based on the 2011 estimated population of 24 deer per square mile in Ninigret National Wildlife Refuge and its acreage of 858 (1.34 square miles), 12-16 total deer would need to be removed initially. The cost would be approximately $333 per deer, or about $4,000 to $5,300 in 2012, and perhaps less in the following years as numbers of deer diminish (USDA Wildlife Services, Don Wilda 2011). Added to the per deer cost, would be the administrative expense for staff oversight of the contract and work, outreach to surrounding landowners and community, and signage, which is anticipated to be approximately $3,500. The total cost is estimated to be between $7,500 and $8,800.

This alternative was eliminated from further consideration because of the annual cost, as well as the fact that baiting is illegal in Rhode Island. USDA would have to apply for a special permit to bait, with little chance of getting one (Brian Tefft 2011b) or sharpshoot without the benefit of bait. This would raise the amount of time necessary to complete the project, probably increasing the cost.

Additionally, the use of sharpshooting would deprive the public of hunting as a source of wildlife-dependent recreation.

## Live Trapping and Relocation

Live trapping and relocation, also called trap-and-transfer, includes the use of trapping, netting and/or immobilization for the purpose of capturing and relocating deer. Trap-and-transfer efforts are complex and expensive operations. Attempts to capture deer require substantial financial and logistic commitments in trained personnel and equipment to ensure safety of people and deer.

Capture and relocation programs have recorded costs ranging from $400 to $3200 per deer (Clark 1995, Drummond 1995, Ishmael et al. 1995).

Trap-and-transfer programs require release sites capable of absorbing relocated deer. Such areas are in short supply in Rhode Island as most areas have a higher deer density than the ecological and cultural carrying capacities, and it is unlikely any area would accept additional deer. Concerns about infectious disease such as chronic wasting disease are a concern that limits the transportation of deer across state boundaries.

Additionally, translocation may not be a "non-lethal" alternative. Deer are susceptible to traumatic injury during handling. Trauma losses average approximately 4% during trap-and-transfer efforts. Capture myopathy, a stress-related disease that results in delayed mortality of captured deer, is thought to be an important (and often overlooked) mortality factor. Delayed mortality as high as 26 % has been reported (Rongstad and McCabe 1984). Survival rates of relocated deer are frequently low. The poor physical condition of deer from an overpopulated range predisposes them to starvation. Trap-and-transfer efforts in California, New Mexico and Florida resulted in losses of 85%, 55% and 58%, respectively, from 4 to 15 months following relocation (O'Ryan and McCullough 1985). A six-year study of translocated deer from the Chicago metropolitan area showed a higher annual survival rate of resident adults than for those translocated deer. Deer-vehicle accidents were the largest source of mortality among the translocated does and presumably resulted from unfamiliarity with the release site (Jones and Witham 1990).

An additional concern associated with relocation of deer, especially from an overpopulated range, is the potential for spreading disease. The presence of chronic wasting disease, Lyme disease, tuberculosis and other communicable diseases in many areas of North America makes this an important consideration and possibly an illegal activity depending on state or provincial regulations.

In conclusion, live-trapping and relocation was eliminated because it is impractical and prohibitively expensive and have limited value in management of free-ranging deer. These techniques may have more value in the control of small, insular herds where deer are tame and/or hunting is not applicable.

Full citations for references are included in the previous references section.

**APPENDIX 2: Final Compatibility Determination**
**Compatibility Determination**

**Use:** Hunting of white-tailed deer (*Odocoileus virginianus*)

**Refuge Name:** Ninigret National Wildlife Refuge

**Establishing Authority:** Ninigret National Wildlife Refuge (Refuge) was established on August 12, 1970, under 16 U.S. Code 667b, Public Law 80 - 537, an Act Authorizing the Transfer of Certain Real Property for Wildlife, or Other Purposes. Additions to the refuge were acquired under the Migratory Bird Conservation Act, 16 U.S.C. 715d.

**Refuge Purposes**: The purpose for which a national wildlife refuge is established is described in the enabling legislation, and for the Ninigret National Wildlife Refuge they are:

"... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds,"

– Migratory Bird Conservation Act of 1929 management program"

– Transfer of Certain Real Property for Conservation Purposes Act of 1972

**National Wildlife Refuge System Mission:** To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans (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 U. S. Fish and Wildlife Service (Service) proposes to allow hunting for white-tailed deer, which is considered a priority public use on national wildlife refuges. Hunting will be done in accordance with refuge regulations and in coordination with the State of Rhode Island, Department of Environmental Management (RIDEM) and the town of Charlestown (town). Hunting opportunities on the refuge will include hunting by permit with the use of firearms and archery where appropriate and as specified by refuge regulation.

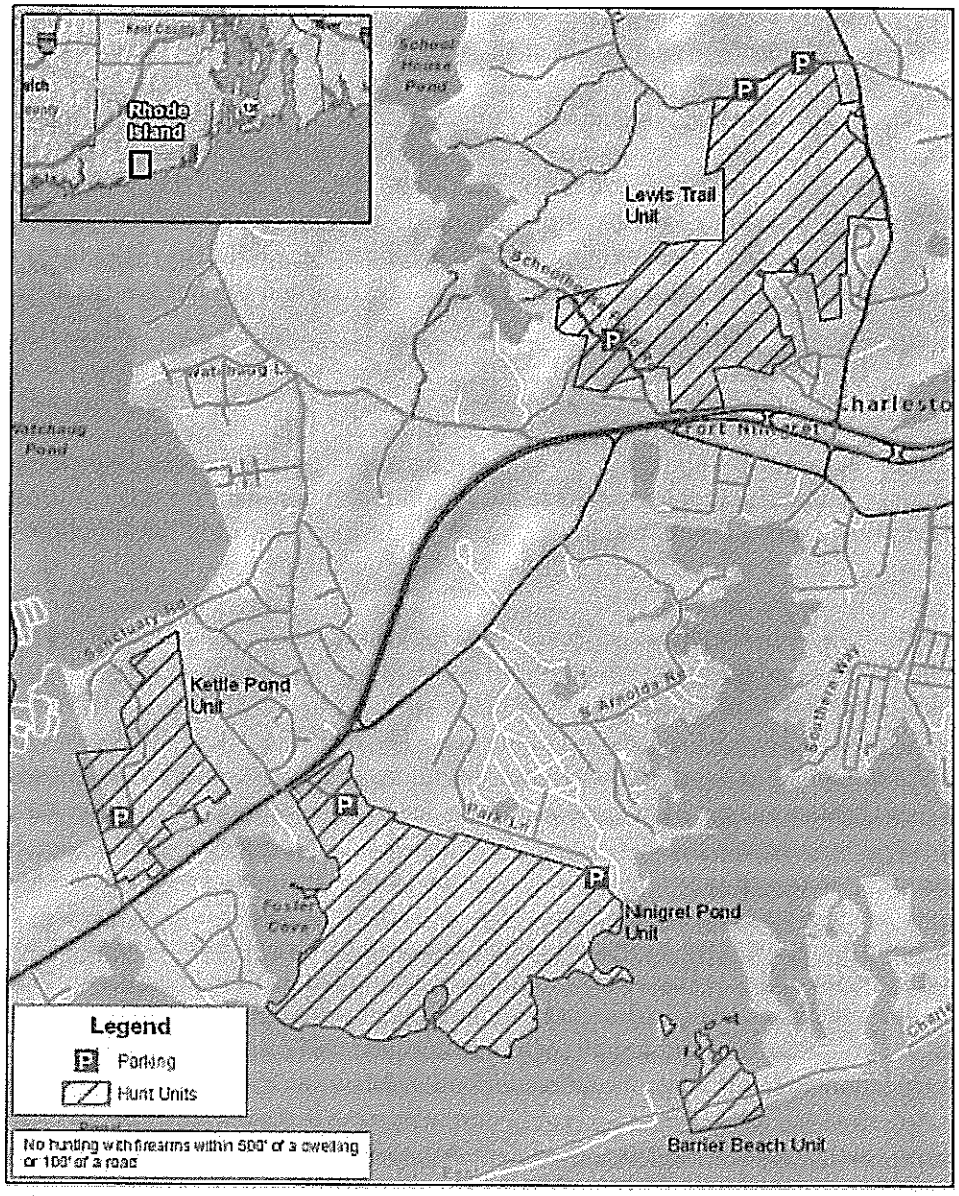
The Service proposes to provide white-tailed deer hunting on refuge lands (figure 1) when and where deemed appropriate for that use. In order to achieve refuge objectives, public safety, reduce conflicts with other recreational, biological, or administrative uses, some areas of the refuge will remain closed to hunting. No hunting would be allowed on the parcel of land on Watchaug Pond, and a small area near the kayak ramp. Other units of the refuge will be open for some form of permitted deer hunting and will be subject to monitoring to ensure such use remains compatible.

**(c) When would the use be conducted?** Season dates will be established on a yearly basis, and will be coordinated with RIDEM and the town. Seasons for the benefit of special youth hunting seasons or hunts for people with disabilities will be coordinated with the RIDEM.

The Service will make a reasonable effort to allow hunters access to all portions of the hunt areas. The intention is to provide safe, quality hunting opportunities that consider the welfare of

Figure 1: Map of Ninigret National Wildlife Hunting Units

# Ninigret National Wildlife Refuge (Hunt Map)




Map prepared by:
Rhode Island NWR Complex
50 Bend Road
Charlestown, RI 02813
October 2011

Landlines approximate

0 2,000 4,000 6,000 8,000 Feet

0 600 1,200 1,800 2,400 Meters

N

the refuge wildlife resources and protection of neighboring properties. Access points will be delineated on the refuge hunt map.

Hunting Season dates by Refuge Management Unit are:

1. Ninigret Pond Unit- Muzzleloader and shotgun seasons will be established on an annual basis, with open season dates occurring during the months of November, December, and January. The length of the season is not likely to exceed a ten (10) day block of time, and would include weekends. For example, the proposed hunt season for 2012 would start the first Saturday after Thanksgiving and extend for ten days. Lottery permits would be given to successful applicants and hunters would be required to report harvest success.

2. Lewis Trail Unit- Same as Ninigret Pond Unit.

3. Kettle Pond Unit- Archery hunting would be allowed during the month of January. The use of tree stands would be required so that the shooting of arrows results in a downward trajectory. The visitor center would remain open to the non-hunting public during normal business hours, but all trails would be closed to non-hunters during hunting times. No hunting would be permitted within 200 feet of the visitor center and parking lots.

4. Barrier Beach Unit- Seasons and methods of harvest (archery, muzzleloader, shotgun) will be set on an annual basis and will run concurrently with harvest seasons and methods of take established for State and private lands adjacent to this unit by RIDEM, when consistent with refuge purposes and objectives. The intent is to match harvest regulations with those applied to adjacent ownerships to reduce confusion, minimize the existence of different regulations in a hunt area, and allow for consistency across all ownerships.

**Special Hunts**

Some refuge units would be open to special hunts. The goal of special hunt is to provide quality recreational hunting experiences that may be limited or not available for underserved hunting populations within the structure of general public hunting. The populations targeted for these special hunts are youth hunters and hunters with disabilities. All special hunts require refuge-specific authorization and will be coordinated with RIDEM.

**(d) How would the use be conducted?** Specific dates for the hunting season will be determined on an annual basis in coordination with RIDEM and the town. Refuge hunting information will be made available to the public annually. The refuge will work cooperatively with RIDEM to advertise hunting opportunities through the yearly hunting abstract.

A refuge hunting permit (OMB Control Number 3-2354 and/or 3-2356) will be required. At this time, permits are proposed to be administered by a contracted company which will feature online and telephone services to collect hunter information, required fees, and issue permits and harvest reports. Harvested deer will be documented on refuge big game harvest reports (OMB Control Number 1018-0140).

**(e) Why is this use being proposed?** Because of concerns related to the impacts of high deer densities on achieving refuge objectives and the potential for providing wildlife-dependent recreational activities, the Comprehensive Conservation Plan for the refuge (USFWS 2002) called for the development of a deer management plan. Hunting of white-tailed deer can help to control the population and limit possible adverse consequences of high deer densities. The current estimated deer density in this area is 24 deer per square mile.

Abundant deer populations can adversely affect plant and animal communities. Tilghman (1989) demonstrated that high deer densities can reduce tree seedling species diversity and reduced the cover of blackberry (*Rubus* spp.) in hardwood forests, and recommended deer densities be keep at or below 18 deer/square mile. Horsley and others (2003) found similar trends, in that high browsing pressure altered plant community development, with the presence of plant species which deer favored declining and an increase in abundance of plant species which deer did not prefer. The authors also found that when deer densities are reduced to approximately 20 deer/square mile, the restoration of forest vegetation was enhanced. DeCastela (1994) found a decline in some songbird populations at deer densities of 20 deer/square mile, and some bird species were absent at deer densities of 65 deer/square mile.

High deer densities can raise issues related to human health and safety. White-tailed deer are the definitive host for the deer tick (*Ixodes scapularis),* which can transmit diseases such as Lyme disease, babesiosis, and human granulocytic ehrlichiosis to humans (Krause and others 2002). Some investigations have found that tick abundance appears related to deer abundance (Lastavica and others 1989; Rand and others 2004; Stafford 2007) which could influence the prevalence of tick borne diseases in a community. High deer densities can also increase potentials for deer-vehicle collisions. DeNicola and Williams (2008) found that reducing deer densities in suburban areas reduced the number of deer-vehicle collisions by 78%.

The National Wildlife Refuge System Improvement Act directs that priority, wildlife-dependent recreational activities (such as hunting) be emphasized where compatible with the purposes for which a refuge was established. Deer hunting is recognized as a traditional form of wildlife-oriented recreation. Development and enhancement of a quality and biologically sound hunt program that 1) leads to enjoyable recreation experiences and 2) maintains the deer population to promote a healthy environment are goals of the refuge hunt program. Hunting provides food and recreation for hunters, and hunters that come from out of town would contribute to the local economy by eating in restaurants and staying in local hotels and motels.

Providing this opportunity on the refuge will not jeopardize attainment of objectives or purposes for which the refuge was established, and complies with goals and objectives as described in the refuge's Comprehensive Conservation Plan of 2002.

**Availability of Resources:** Increased costs associated with administering a hunt program would require additional funds to ensure the safe, efficient, and effective administration of a deer hunt. Annual refuge hunting brochures will need to be provided, and contracting fees for the permitting process would need to be covered. The total annual cost of administering a refuge hunt program would be approximately $4,500. This amount is based on salaries for administrative and law enforcement personnel, creation and distribution of hunting information, permit fee administration, transportation, monitoring, signing, and other miscellaneous expenses. A cost of no less than $5.00 will be charged per hunting permit to help defray administrative

costs and to help assure adequate resources are available to implement the hunt program. If the Service's required administrative involvement increases, the cost will have to be re-evaluated to ensure a hunt compatible with refuge objectives and purposes can be conducted.

**Anticipated Impacts of the Use**. The impacts of allowing hunting may include disturbance of non-target species in the course of tracking deer, destruction of vegetation, and possible creation of unauthorized trails by hunters and littering.

Piping plover (*Charadrius melodus*), a species listed as Threatened under the Endangered Species Act (Public law 93-205), may occur on the refuge during the nesting and migration periods, but would not be present during the hunting seasons. The program will have no effect on this species.

The hunting seasons will be implemented outside of the nesting and migratory periods of songbirds on most refuge management units, which make heavy use of the refuge during the migration season. Hunting for white-tailed deer beginning in September on the Barrier Beach Unit is not anticipated to substantially affect songbird migration.

Deer densities are likely to decline locally; however, overall population levels will be influenced by deer populations both on and off the refuge. Reductions in deer densities should reduce browsing pressure on native plants, thereby enhancing productivity and seedling survival, benefiting migratory songbirds.

Possible trampling of vegetation and littering is not anticipated to occur at a significant level.

During the hunting season, portions of the refuge would be closed to other public uses. This impact will be insignificant, since most public use occurs from April 1 through October 31.

The proposed action would not affect any cultural resources that may be located on the refuge.

Possible effects from the noise of gunfire will be minimized because of the long distance between occupied residences and hunt units. Hunting on the Kettle Pond Unit, where some hotels and several residences abut refuge lands, will only be allowed using archery methods of take, eliminating any potential noise disturbance to neighbors.

All or part of the refuge may be closed to hunting at any time if necessary for public safety, to provide wildlife sanctuary, or for other management reasons. If necessary, modifications may be made to refuge-specific regulations and/or the hunt program based on harvest data and/or public use issues.

All seasons would be coordinated with RIDEM. Some hunting regulations may be more restrictive than State regulations to meet refuge objectives.

The refuge has an active law enforcement program to help ensure compliance with the hunt program and other refuge specific regulations. Close coordination with the State's conservation officers will help ensure compliance with State regulations.

Determination:

_____ Use is not compatible

__X__ Use is compatible, with the following stipulations

**Stipulations Necessary to Ensure Compatibility:**

- Hunters must abide by all applicable refuge, State and Federal regulations.
- All hunters must obtain all necessary State hunting licenses and permits.
- Each person shall comply with the terms and conditions authorizing access or use of wildlife refuges, including the terms and conditions under which hunting permits are issued. This includes but is not limited to the return of big game harvest reports.
- A law enforcement program will help ensure hunt regulation compliance and protect refuge resources.
- The following refuge regulations must be followed:
  1. The use of any drug on any arrow for bow hunting, including crossbows, on national wildlife refuges is prohibited. Archers may not have arrows employing such drugs in their possession on any national wildlife refuge.
  2. The distribution of bait and/or hunting over bait is prohibited.
  3. The use of nails, wire, screws or bolts to attach a stand to a tree, or hunting from a tree into which a metal object has been driven to support a hunter is prohibited.
  4. The use or possession of alcoholic beverages while hunting is prohibited.
  5. The use of spotlights, automotive headlights, or other artificial light for the purpose of spotting, locating, or taking any animal is prohibited. This regulation applies even if no weapons are in the vehicle.
  6. Anytime RIDEM hunting regulations specifies the requirement that hunters wear blaze orange clothing, hunters must adhere to those regulations both in amount of blaze orange required and in specified seasons. For example, both archery and firearms hunters are required to wear blaze orange during the firearm seasons in areas open to both types of hunts.
  7. Permanent tree stands are prohibited. All portable tree stands be removed from the refuge daily. The Service takes no responsibility for the loss or theft of tree stands left in the field.
  8. Tree stands must be marked with owner information (name, address, phone number).
  9. The use of motorized or non-motorized vehicles on the refuge will be prohibited, unless prior approval from refuge manager (e.g., accessibility for people with disabilities) is granted. This includes but is not limited to vehicles, all-terrain vehicles, dirt bikes, motorcycles, and bicycles.
  10. Marking (this includes but is not limited to, the use of flagging, bright eyes, tacks, and paint), cutting and/or removal of trees or vegetation is prohibited.
  11. Hunting is prohibited in areas designated as closed.
  12. Hunting is prohibited within 100 feet of a State, county, city roadway or refuge trail.
  13. Hunting on the Kettle Pond Unit is prohibited within 200 feet of the visitor center and parking lots.
  14. Hunting with the use of firearms is prohibited within 500 feet of an occupied

dwelling.

15. Archery deer hunting prohibited within 200 feet of an occupied dwelling.
16. The use of buckshot is prohibited.
17. Hunters are prohibited from taking any other wildlife.
18. The refuge requires hunters to notify a refuge representative if they need to enter a closed area to retrieve game.
19. Deer may not be field-dressed within 100 feet or a road or trail.
20. We prohibit tracking 2 ½ hours after legal sunset. You must make a reasonable effort to retrieve all wounded deer. This may include next-day tracking except Federal holidays.
21. We prohibit deer drives or anyone taking part in any deer drive. We define a "deer drive" as an organized or planned effort to pursue, drive, chase, or otherwise frighten or cause deer to move in the direction of any person or persons who are part of the organized or planned hunt and known to be waiting for the deer. We also prohibit organized deer drives without a standing hunter.
22. Refuge hunting information, and the Rhode Island Hunting and Trapping Abstract will inform hunters of both State and refuge regulations. Refuge-specific hunting regulations, as listed in the "Ninigret National Wildlife Refuge Hunting Regulations," will be in effect.

**Justification:** The National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57) identifies six legitimate and appropriate uses of wildlife refuges: hunting, environmental education, interpretation, fishing, wildlife observation and wildlife photography. These priority public uses are dependent upon healthy wildlife populations. Where these uses are determined to be compatible, they are to receive enhanced consideration over other uses in planning and management. Hunting of white-tailed deer on the refuge is justified within refuge objectives by providing wildlife-oriented recreation and promoting appreciation of wildlife and the outdoors. Recreational hunting is also a valid means of population control and can serve to keep wildlife populations in check. The anticipated effects of the hunt on other resources can be reasonably reduced or mitigated. These activities will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was

established.

**Signature - Refuge Manager:** _____ 12/14/11
(Signature and Date)

**Concurrence - Regional Chief:** _____ 1/25/2012
(Signature and Date)

**Mandatory 10- or 15-year Reevaluation Date:** _____

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DeCastela, D. S. 1994. Effect of white-tailed deer on songbirds within managed forests in Pennsylvania. Journal of Wildlife Management 58:711-718.

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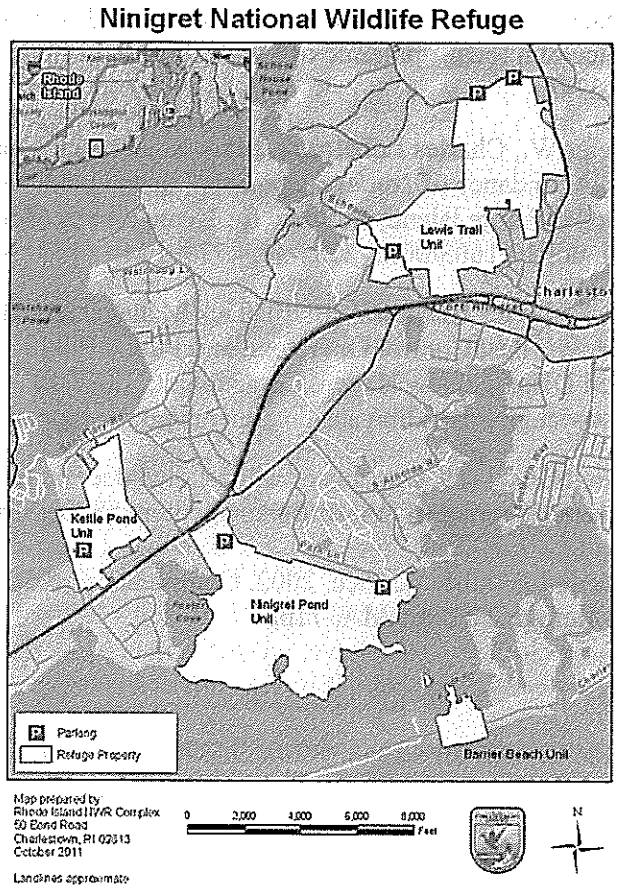
**APPENDIX 3: Final Hunt Plan for Alternative C (Preferred Alternative)**

# Ninigret National Wildlife Refuge Hunt Plan

## I. INTRODUCTION

The Hunting Plan is part of the overall Deer Management Plan for the Ninigret National Wildlife Refuge (Refuge, NWR). The refuge is located in Charlestown, Rhode Island, 30 miles south of Providence (figure 1). Transfers of land from the U.S. Navy to the Service primarily established and expanded the refuge, including: 27.5 acres of the Ninigret Pond barrier beach in 1970, 316.4 acres of the Naval Landing Field in 1979, and an additional 60 acres 1982.

Figure 1. Map of the Ninigret National Wildlife Refuge, Town of Charlestown, Washington County, Rhode Island.




With the recent acquisition of two large tracts of mature deciduous forest north of U.S. Route 1, the refuge now owns 780 acres. The refuge is composed of a mainland parcels and a barrier beach parcel. Its mainland parcel contains 868 acres, including 3 miles of shoreline on Ninigret Pond. The barrier beach parcel contains 27.5 acres between Ninigret Pond and Block Island Sound.

With the adoption of this hunt plan, limited big game hunting will be added to existing public use opportunities on the Ninigret NWR. Deer populations are presently adequate to sustain a sport harvest. Sport hunting will be the tool used to maintain healthy, sustainable, free-ranging deer herds consistent with refuge management objectives.

## II. CONFORMANCE WITH STATUTORY AUTHORITY

The refuge staff developed this hunting chapter to guide hunting on the refuge in a manner that allows us to fulfill the purposes for which the refuge was established as well as provide wildlife-dependent recreation.

Guidance for authorizing public uses on national wildlife refuges is provided in the Public Law 105-57 National Wildlife Refuge System Improvement Act of 1997 (Improvement Act). The Improvement Act states, "compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System…through which the American public can develop an appreciation for fish and wildlife." The Improvement Act recognizes that wildlife-dependent recreational uses involving hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation, when determined to be compatible, are a legitimate and appropriate use of Refuge System lands. The Improvement Act states that these specific six uses should receive priority consideration in refuge planning and management. Other uses not listed as priority public uses may be allowed if they are determined to be appropriate and compatible with the purposes for which the refuge was established.

According to the Improvement Act, when a wildlife-dependent recreational use is determined to be a compatible use and is not inconsistent with public safety, that activity should be facilitated. The term "compatible use" is defined as a wildlife-dependent recreational use or any other use of a refuge unit that will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge. The U.S. Fish and Wildlife Service's Final Compatibility Policy (USFWS, 2000) pursuant to the Improvement Act delegates the responsibility of determining compatibility to the refuge manager with concurrence by the regional National Wildlife Refuge System Chief.

The purposes for each national wildlife refuge are described in the establishing legislation. Established in 1970, the purposes for Ninigret NWR are:

"... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds," – Migratory Bird Conservation Act of 1929

"... particular value in carrying out the national migratory bird management program" – Transfer of Certain Real Property for Conservation Purposes Act of 1972

The mission of the U.S. Fish & Wildlife Service is:
"...working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people."

In addition to the overall mission of the Service, the National Wildlife Refuge System also has its own mission as set forth by congress in the National Wildlife Refuge System Improvement Act of 1997. It is as follows:
"...to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of

Americans."

Several laws and executive orders apply to hunting on national wildlife refuges. They are summarized below.

**Executive Order 13443 (August 16, 2007)**
This Executive Order, entitled "Facilitation of Hunting Heritage and Wildlife Conservation," "directs federal agencies that have programs and activities that have a measurable effect on public land management, outdoor recreation, and wildlife management, including the Department of the Interior and the Department of Agriculture, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat."

**National Wildlife Refuge System Improvement Act of 1997**
Signed by President Clinton on October 9, 1997, this law defines compatible wildlife-dependent recreation as "legitimate and appropriate general public use of the [National Wildlife Refuge] System." It establishes hunting, fishing, wildlife observation and photography, and environmental education and interpretation as "priority public uses" where compatible with the mission and purpose of individual national wildlife refuges.

**Executive Order 12996 (March 25, 1996)**
This Executive Order, entitled "Management and General Public Use of the National Wildlife Refuge System," contains a directive to: "...recognize compatible wildlife-dependent recreational activities involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation as priority general public uses of the Refuge System..."

**Endangered Species Act of 1973**
This Act, as amended, did not specifically address the Refuge System but it does directly affect management activities within the National Wildlife Refuge System. The Act directed federal agencies to take actions that would further the purposes of the Act and to ensure that actions they carry out, authorize or fund do not jeopardize endangered species or their critical habitat.

**The National Wildlife Refuge System Administration Act of 1966**
This Act (16 U.S.C. 668 dd-ee; 80 Stat. 927) authorizes the Secretary to "...permit the use of any area within the System for any purpose...compatible with the major purposes for which such areas were established..."

**The Refuge Recreation Act of 1962**
This Act (16 U.S.C. 460k) authorizes the Secretary of the Interior to administer such areas for public recreation as an appropriate incidental or secondary use only to the extent that it is practicable and not inconsistent with the primary objectives for which the area was established. In addition, the Refuge Recreation Act requires that funds are available for the development, operation, and maintenance of the permitted forms of recreation.

**Code of Federal Regulations (CFR), Title 50**
Section 31.2(e) lists hunting as a method of surplus wildlife population control.

Section 31.15 states that the privilege of hunting may be extended to the general public.

Section 32.1 states that the opening of a wildlife refuge area to hunting will be dependent upon the provisions of law applicable to the area and upon a determination by the Secretary of the Interior that the opening of the area to the hunting of migratory game birds, upland game, or big game will be compatible with the principles of sound wildlife management and will otherwise be in the public interest.

Section 32.2 has provisions applicable to each person engaged in public hunting on a wildlife refuge area.

Section 32.27 has specific regulations for this refuge and will need to be changed in accordance with this plan or policy as needed.

Section 32.3 explains the procedure for publication of special regulations.

## III. STATEMENT OF OBJECTIVES

The Ninigret National Wildlife Refuge Comprehensive Conservation Plan (CCP) identified the need to identify how best to manage deer on the refuge given concerns regarding deleterious effects from high deer densities. The CCP also established (amongst others) the following goals:

Goal 2: Maintain and/or restore natural ecological communities to promote healthy, functioning ecosystems, and

Goal 4: Provide opportunities for high quality, compatible, wildlife-dependent public use.

Allowing for the harvest of white-tailed deer with the use of sport hunting can assist the refuge in achieving these goals.

Other objectives of the refuge deer hunting program include:

- Provide opportunities to expand hunting for deer on the refuge to assist in maintaining deer densities between 12-15 deer per square mile. Coordinate efforts with the Rhode Island Department of Environmental Management (RIDEM) and town of Charlestown.

- Provide a refuge youth hunting program. Provide this opportunity to young people each year and seek to enroll disabled and disadvantaged youth plus youth of single parent households located in urban areas.

- Provide accessible hunting opportunities in cooperation local accessibility experts and organizations. Expand accessible hunting opportunities to include deer in Ninigret Pond unit of the refuge.

- Enhance public understanding of refuge hunting opportunities by providing quality maps, signs and wording within brochures and on the refuge web page.

- Increase the visibility of refuge law enforcement and hunter adherence to Federal and State regulations to ensure high quality, ethical hunting.

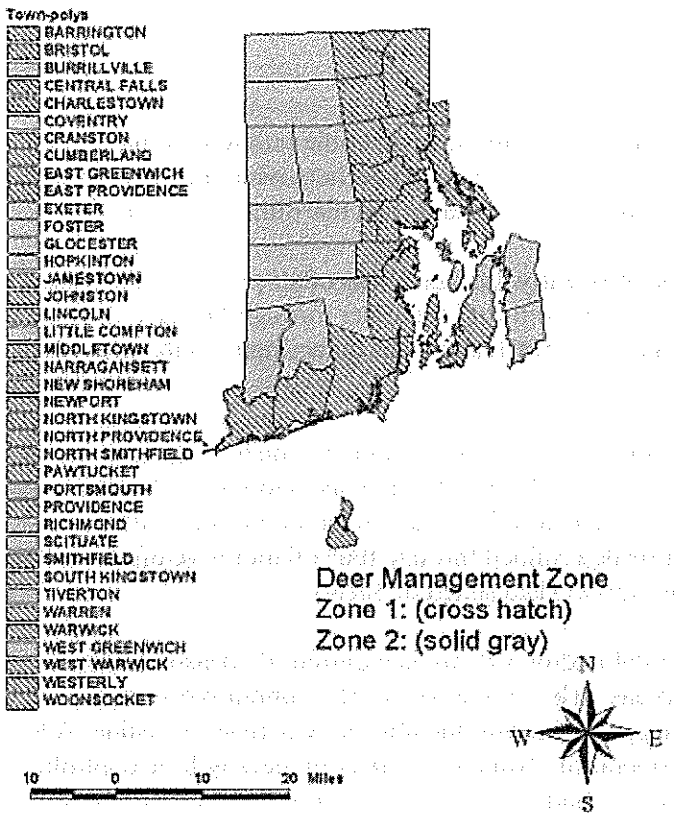
## IV. ASSESSMENT

Currently, deer population dynamics are annually evaluated by RIDEM through various surveys including hunter harvest and success rates, winter aerial big game surveys, antler beam measurements and disease surveillance. This data, combined with biological knowledge of individual species will be used to evaluate and regulate hunting on the refuge. If populations, habitat, or hunter success rates adversely impact refuge resources, modifications to the hunt program will be addressed. Refer to the Ninigret National Wildlife Refuge Deer Management Plan Environmental Assessment (EA) for a thorough discussion of refuge habitats that support deer populations.

Specific issues of concern that the State of Rhode Island has regarding overabundance of deer are ecological damage to habitats, auto strikes, nuisance complaints, and health issues due from tick-borne disease (i.e., Lyme disease, ehrlichiosis and babesiosis). The State of Rhode Island is divided into 2 main Deer Management Zones (figure 2). Zone 1 is the urban coastal zone and Zone 2 is the Western Zone. The RIDEM deer management strategy is to provide a sustainable quality deer management program that maintains populations that are ecologically sound and maintaining quality hunting programs for deer that recognizes the strong hunting tradition in Rhode Island and the important role that hunters play in population management.

Zone 1 depicts the towns with a high road kill index, which correlates with both high deer and human populations. The RIDEM deer management strategy strives to reduce the auto strikes by increasing hunter harvest in areas with a high deer population and high deer density. Hunting is the primary cause of mortality in the RI deer herd; however, significant mortality to deer occurs as a result of many other factors. Auto strikes are a major factor in adult and yearling deer mortality during the spring and summer months and annually, auto strikes account for up to half of the total deer mortality. In 2010, auto strikes were 37% of the hunting harvest and in 2009 it was 50% of the legal harvest. Rhode Island is striving for a road kill index of fewer than 1.5 road kills per square mile. In 2009, statistics show that the township of Charlestown has a road kill index of 2.1 deer per square mile.

Figure 2. Deer Management Zones in Rhode Island.




To determine herd health, RIDEM measures the antler beam diameters of yearling males as well as trends in deer weights. Hog-dressed, or field dressed, weights of mainland yearlings increased 3.8% for males and 2.1% for females (Table 1) in comparison to the 3-year average. This can be attributed to the abundant acorn crop in the fall of 2010 and is an indicator of good health. Mean antler beam diameter of yearling deer is another indicator of heard health (Table 2). Large antler beam diameters (20.0mm+) indicate excellent health while small beam diameters (<15.0 mm) indicate poor health. Antler beam measurements in the 17 to 18 mm range indicate fair to good body condition. Data collected from yearling males over the last 3 years indicate Rhode Island's deer are in good condition.

**Table 1: Deer Dressed Weights (Hog Dressed Weights)**

**Average Hog Dressed Weights Mainland Deer**

| | Male (lbs) | | | | | Female (lbs) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2010 | 2009 | 2008 | % change 2009 to 2010 | % change 3-year average | 2010 | 2009 | 2008 | % change 2009 to 2010 | % change 3-year average |
| Fawn | 66.3 | 60.0 | 64.0 | 10.5 | 4.4 | 60.6 | 59.0 | 60.0 | 2.7 | 1.3 |
| Yearling | 104.8 | 101.0 | 103.0 | 3.8 | 1.8 | 91.9 | 90.0 | 88.0 | 2.1 | 0.0 |
| Adult | 137.9 | 142.0 | 147.0 | -2.9 | -3.1 | 107.7 | 113.0 | 112.0 | -4.7 | -2.8 |

Table 2: Average antler beam diameters for yearling males (in mm.)

| 2010 | 2009 | 2008 |
|---|---|---|
| 17.0 | 16.8 | 17.3 |

From these factors it is apparent there are sufficient numbers of deer to allow a hunt and still sustain a viable population within the refuge and around the State.

## V. DESCRIPTION OF HUNTING PROGRAM

### A. Program

The Ninigret NWR hunting program is designed to provide compatible public hunting opportunities that support refuge objectives, while minimizing conflicts with non-hunting user groups. The hunt area is comprised of upland forest, wetlands and maritime shrubland.

Hunting dates on Ninigret NWR will be significantly different from other public and private lands found in Rhode Island. Dates within the months of December through February will be coordinated each year with RIDEM and the town of Charlestown to facilitate a safe and successful hunt experience.

General hunting provisions including seasons, licenses, safety courses, species, and bag limits are established within the regulations of the Rhode Island Hunting and Trapping Abstract. However, the Ninigret NWR hunt will be more restrictive to assure compatibility with other refuge purposes. Harvest objectives shall be determined through the collaborative efforts of the RIDEM and refuge officials using various survey data stated in Section 4.

A refuge hunting permit, OMB forms 3-2354 and/or 3-2356, is required. Preseason lottery drawings are proposed for high demand areas. The refuge will work cooperatively with the RIDEM to advertise lottery drawings through yearly hunting abstract whenever possible. A fee will be established to defray the costs of operation. Numbers of deer hunters will be controlled via the number of permits issued by the refuge and assigned in the Ninigret NWR permit lottery. As a national wildlife refuge, Ninigret will provide hunting opportunities through these preseason drawings for local, in-state, and out-of-state hunters. Knowing in advance of a hunting opportunity allows hunters to prepare, plan, and scout, which ultimately improves the quality of their hunting experiences.

Preseason lottery drawings would most likely be administered by a contracted company which will feature online and telephone services to collect hunter information, required fees , and issue permits. These services would provide hunters with the ability to apply, pay for, and receive hunting permits in advance of the hunting dates. All fees must be paid prior to the issuance of a permit. Refuge staff would work with the contractor to provide the highest level of customer support. For the preseason drawing for the lottery deer hunt area, hunters will be selected for a hunt date based on their date preferences. If selected, a limited number of hunters would have access to the hunt area and may choose their hunting location on a first-come, first-serve basis on the day of the hunt. Hunters could be picked for multiple dates.

Hunters on the refuge will be required to provide the refuge complex staff with documentation that clearly indicates the number of days hunted and the sex and number of animals harvested or wounded. This information would be collected on OMB form 3-2359. The hunting program will be reviewed on an annual basis and necessary changes will be incorporated accordingly. Law enforcement will consist of random hunting license and bag limit checks as well as investigation and prosecution of offenses.

## B. Opportunity

The National Wildlife Refuge System Improvement Act of 1997 allows six priority public uses on national wildlife refuges as long as they are compatible with the purposes for which the refuge was established. These include hunting, fishing, wildlife observation and photography, and environmental education and interpretation.

Actual hunt dates will be set annually by the refuge, with coordination from the RIDEM and the town of Charlestown. This helps reduce confusion when hunters participate in hunting activities on Service lands. The refuge will work cooperatively with the RIDEM to advertise hunting opportunities through the yearly hunting abstract.

In order to achieve refuge objectives and provide opportunities for all priority public uses, some areas of Ninigret NWR will remain closed to hunting. Certain refuge areas are closed to hunting to reduce conflicts with other recreational, biological, or administrative uses.

A refuge hunting permit, OMB form3-2354 and /or 3-2356, is required. Preseason lottery drawings are proposed for high demand areas. Permits are proposed to be administered by a contracted company which will feature online and telephone services to collect hunter information, required fees, and issue permits and harvest reports. Harvested deer will be documented on refuge big game harvest reports (OMB Control Number 1018-0140).

General Seasons by unit (see figure 3) on the refuge are:

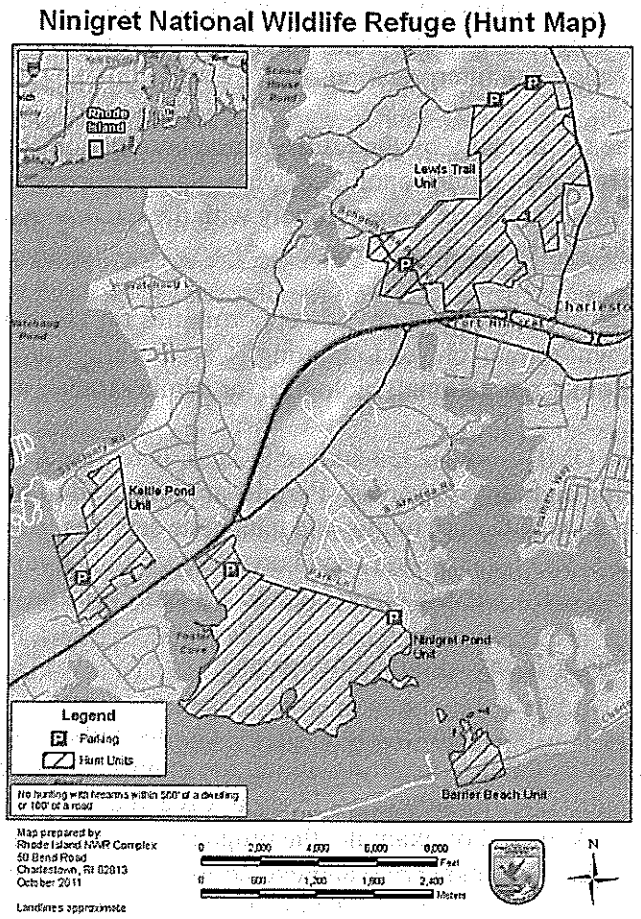
1. Ninigret Pond Unit- Muzzleloader and shotgun seasons will be established on an annual basis, with open season dates occurring during the months of November, December, and January. The length of the season is not likely to exceed a ten (10) day block of time, and would include weekends. For example, the proposed hunt season for 2012 would start the first Saturday after Thanksgiving and extend for ten days. Lottery permits would be given to successful applicants and hunters would be required to report harvest success.

2. Lewis Trail Unit- Same as Ninigret Pond Unit.

3. Kettle Pond Unit- Archery hunting would be allowed during the month of January. The use of tree stands would be required so that the shooting of arrows results in a downward trajectory. The visitor center would remain open to the non-hunting public during normal business hours, but all trails would be closed to non-hunters during hunting times. No hunting would be permitted within 200 feet of the visitor center and parking lots.

4. Barrier Beach Unit- Seasons and methods of harvest (archery, muzzleloader, shotgun) will be set on an annual basis and will run concurrently with harvest seasons and methods of take established for Stateand private lands adjacent to this unit by RIDEM, when consistent with refuge purposes and objectives. The intent is to match harvest regulations with those applied to adjacent ownerships to reduce confusion, minimize the existence of different regulations in a hunt area, and allow for consistency across all ownerships.

Figure 3. Map of Hunt Units, Ninigret National Wildlife Refuge.




## Special Hunts

Some refuge units would be open to special hunts. The goal of special hunt is to provide quality recreational hunting experiences that may be limited or not available for underserved hunting populations within the structure of general public hunting. The populations targeted for these special hunts are youth hunters and hunters with disabilities. All special hunts require refuge-specific authorization and will be coordinated with RIDEM.

## C. Access

The Service will make a reasonable effort to allow hunters access to all portions of the hunt areas. The intention is to provide safe, quality hunting opportunities that consider the welfare of the refuge wildlife resources. Access points are delineated on the refuge hunt map.

**Availability of Resources:** Increased costs associated with administering a hunt program would require additional funds to ensure the safe, efficient, and effective administration of a deer hunt. Annual refuge hunting brochures will need to be provided, and contracting fees for the permitting process would need to be covered. The total annual cost of administering a refuge hunt program would be approximately $4,500. This amount is based on salaries for administrative and law enforcement personnel, creation and distribution of hunting information, permit fee administration, transportation, monitoring, signing, and other miscellaneous expenses. A cost of no less than $5.00 will be charged per hunting permit to help defray administrative costs and to help assure adequate resources are available to implement the hunt program. If the Service's required administrative involvement increases, the cost will have to be re-evaluated to ensure a hunt compatible with refuge objectives and purposes can be conducted.

## VI. CONFLICTS WITH OTHER MANAGEMENT OBJECTIVES

### A. Biological Conflicts

Excessive deer densities can alter plant and animal communities, including adversely affecting trust resources and species and habitats of concern (Tilghman 1989, DeCalesta 1994, Horsley et al. 2003). Deer exert pressure on their habitats mostly by their feeding habits. As most animals, they have preferred foods, therefore their impacts can be excessive on a few plant species, favor the nonpreferred foods and shift ecosystem dynamics. The current estimated deer density is approximately 24 deer per square mile on Ninigret NWR (Tefft 2011a). The overabundance of deer has likely been caused by the reduction in number of natural predators such as wolves and cougars, and the recent proliferation of habitat types that support white-tailed deer with highly palatable and nutritious food items (e.g., suburban gardens). Additionally, the elimination or reduction of hunting by humans has lifted a control of the population. A reduction of deer to densities of 12-15 per square mile would benefit natural resources and human health and safety (Tilghman 1989, DeCalesta 1994, DeNicola and Williams 2008, Kirkpatrick and LaBonte 2007).

The wide variety of habitats has contributed to the great diversity of birds found on Ninigret NWR. Approximately 70 species are known to nest on the refuge. Mist-netting on refuge lands has shown that gray catbirds (*Dumetella carolinensis*), common yellowthroats (*Geothlypis trichas*), and red-winged blackbirds (*Agelaius phoeniceus*) are the most abundant nesting birds in the shrub community (Eddleman 1993; Wallace 1995; Paton 1996, 1997, 1998). Breeding bird survey data indicates that the refuge may have one of the highest densities of nesting yellow-breasted chat in Rhode Island (Enser 1992). Other birds using early successional shrub and grassland vegetation for nesting include white-eyed vireo (*Vireo griseus*), willow flycatcher (*Empidonax traillii*), prairie warbler (*Dendroica discolor*), and American woodcock (*Scolopax minor*).

Birds using the wetlands include green herons (*Butorides virescens*), wood ducks (*Aix sponsa*), Virginia rails (*Rallus limicola*), swamp sparrows (*Melospiza georgiana),* and marsh wrens (*Cistothorus palustris*). The coastal location of the refuge provides vital stopover habitat for migratory birds seeking to quickly and safely accumulate energy stores. According to Moore,

coastal scrub/shrub and dune/scrub habitats provide very high species richness and abundance (Moore, et al. 1995). Birds are primarily foraging on berries and insects.

Winter birds present on the refuge include northern harrier (*Circus cyaneus*), short-eared owl (*Asio flammeus*), eastern bluebird (*Sialia sialis),* and a variety of sparrows. Waterfowl include American black duck (*Anas rubripes*), mallard (*Anas platyrhynchos*), American wigeon (*Anas americana*), and green-winged teal (*Anas crecca*). Ninigret Pond is an important wintering area for bufflehead (*Bucephala albeola*), common goldeneye (*Bucephala clangula*), greater scaup (*Aythya marila*), and red-breasted merganser (*Mergus serrator*).

The State deer hunting season overlaps with the fall migration (mid-August to mid-November) of many bird species. Hunters can have similar effects on birds as birdwatchers and hikers. Disturbance may directly change the behavior of birds. This altered behavior may change foraging patterns (Skagen et al. 1991), increase distraction displays, or cause birds to leave, or completely avoid the disturbed areas (Burger et al. 1995). Additionally, the higher level of vigilance required reduces the time available for foraging, which places increased stress on adults trying to find food and may affect their survival (Marcum 2005). The refuge's modified hunt dates disallow hunting during all of migration on one unit (Kettle Pond – January only) and most of the migration period on the largest units (Ninigret Pond and Lewis Trail). On the smallest unit (Barrier Beach) hunting will commence on September 15. Based on the refuge's planned maximum hunter density of 1 hunter per 20 acres, and due to the small number of hunters in any one area, and the little overlap with migration on most of the acreage, it is unlikely an adverse effect will occur.

Tilghman (1989) demonstrated that high deer densities can reduce trees seedling species diversity and reduced the cover of blackberry (*Rubus* spp.) in hardwood forests, and recommended that deer densities be kept at or below 18 deer per square mile. Horsley et al. (2003) found that high browsing pressure altered plant community development, with the presence of plant species which deer favored declining, and species that deer did not prefer increasing. The authors also found that when deer densities are reduced to approximately 20 deer per square mile, the restoration of forest vegetation will begin. DeCastela (1994) found a decline in some songbird populations at deer densities of 20 deer per square mile, and some bird species were absent at deer densities of 65 deer per square mile.

Plants deter browsing by arming themselves with morphological or physical weapons (e.g. thorns) and chemical ones such as phytochemicals causing unpalatability to potential feeders. Many nonnative, invasive plants have these defenses and therefore are avoided by deer, thus increasing in size and abundance and area covered as other more palatable native plants are eaten. Additionally, certain native plants that are unpalatable are left unbrowsed and are proliferating altering the composition of the habitats.

Increased vehicle accident rates due to deer collisions are now a serious problem in the United States and other countries (Côté et al. 2004). High deer densities can increase potentials for deer-vehicle collisions. Deer collisions result in human deaths and injuries, and material damage to vehicles, not to mention often painful or slow deer deaths. In 2010, 6 collisions of vehicles with

deer were reported for the town of New Shoreham. DeNicola and Williams (2008) found that reducing deer densities in suburban areas reduced the number of deer-vehicle collisions by 78%.

In general, the higher the population of deer in a particular area, the greater the tick density will be (Lastavica et al. 1989, Rand 2004, Stafford 2007). Of particular concern to humans are three diseases transmitted by ticks to people: Lyme disease, babesiosis, and ehrlichiosis (Krause et al. 2002). The number of human cases of Lyme disease is correlated with deer density (Telford III 2002; Wilson et al. 1988, 1990).

A reduction of deer densities in Mumford Cove, Connecticut resulted in a lower incidence rate of Lyme disease in humans (Kirkpatrick and LaBonte 2007). As more humans use areas frequented by deer, and without a decrease in the deer numbers, we would expect to see more cases of Lyme disease (but, see Jordan and Schulze 2005, Jordan et al. 2007, and Ostfeld et al. 2007).

A unique rare plant site, containing eightspecies the State of Rhode Island considers rare or endangered, lies on Ninigret NWR. The rare species include colicroot (*Aletris farinosa*), slimspike three-awn (*Aristida longespica*), yellow-fringed orchids (*Platanthera ciliaris*), tall- and few-flowered nutrushes (*Scleria triglomerata, S. paucifolia*), marsh milkwort (*Polygala cruciata),* little ladies' tresses (*Spiranthes tuberosa*),and Indiangrass (*Sorgastrum nutans*) (Killingbeck, et al. 1998). This area will be signed as off limits to protect the habitat. Even if hunters were to traverse this area accidentally, it is unlikely they would cause any direct damage to individual plants as the plants will have senesced. In fact, reduction of deer may decrease foraging pressure on the plants and cause them to increase in number and area covered.

The piping plover (*Charadrius melodus*), a federally threatened species, has nested either on the barrier beach portion of the refuge or on the adjacent Ninigret Conservation Area every year since 1993. Piping plover typically breed on beaches from April through July, and into August if they re-nest after losing an early clutch. Symbolic fencing and nest exclosures are put in place each April. Fencing is taken down once chicks fledge, typically in August each year. Due to the fact that the young will have fledged and that adult and juvenile birds will begin to travel south in September, and because they are highly mobile, it is unlikely an adverse effect to this species will occur.

Least tern (*Sterna antillarium*), a State-listed threatened species , has also benefitted from and responded favorably to strategies to protect nesting piping plover. The last young to fledge generally do so in August. Due to their mobility as well as their scarcity during the fall, it is unlikely an adverse effect will occur.

Hunting deer on the refuge would not affect the endangered and threatened species inhabiting the area. Indeed, reduced deer densities caused by hunting may positively affect rare plant species as foraging pressure is reduced. Hunting opportunities provided on Ninigret NWR are designed to result in minimal disturbance to trust resources. Minimizing disturbance factors and potential impacts are a primary consideration in season and regulation development. Also, the use of bicycles and other motorized and non-motorized vehicles is prohibited on the refuge.

### B. Social Conflicts

During the duration of the hunt period trails within and near the hunt zones will be closed to all visitors except hunters, as will the kayak launch, to ensure visitor safety. Education programs would not be conducted outdoors at the hunted tracts during hunt periods. However, the Kettle Pond Visitor Center would remain open. Although the visitor center will remain open, it is anticipated that some visitors will choose not to visit during the hunting period at the Kettle Pond Unit due to perceived risk. Signage will go up at the entrance to the Kettle Pond Unit and in the parking lots informing the public of the hunt and that the trails are closed. This may discourage visitors from entering the Kettle Pond Unit, even to go to the visitor center, especially those with small children or those who dislike hunting.

Public uses are designed in such a manner as to complement refuge objectives and minimize potential conflict. Opportunities for other wildlife-dependent recreation on neighboring properties will continue to exist and include wildlife observation, photography, environmental education and interpretation, and fishing. If unforeseen conflicts arise, the refuge manager may either further restrict hunting or limit other public uses during the hunting season to ensure public safety and provide a climate for productive coexistence of visitor uses. If further action is required to solve conflicting use problems, equal consideration will be given to the various wildlife-dependent recreational uses allowed on the refuge.

It is not expected that hunting will impact any cultural resources.

## VII. HUNTING PROGRAM SPECIFICS

### A. Regulations and Safety

Safety is the number one priority when hunting on national wildlife refuge lands. To reduce the potential for hunting accidents, injuries and fatalities, to reduce the potential for conflict between hunters, landowners, and other resource users, and to promote safe, responsible, and ethical use of the environment and our resources, each person hunting in the State of Rhode Island is required to attend a mandatory training in safe hunting practices and the handling and use of firearms and bow and arrow when applying for a license for the first time. Hunter safety training covers safety rules for hunters, hunting heritage, hunting firearms, and equipment. Other topics include marksmanship fundamentals, responsibilities of hunters for our environment, wildlife, landowners, and others, wildlife identification and habits, field care of harvested game, handling outdoor emergencies, wildlife management, law enforcement and the student's role in the future of hunting. One of the most important elements of hunter safety courses is how hunting accidents are caused and how they can be prevented.

Since the inception of the Rhode Island's mandatory hunter safety program, over 40,000 individuals have completed the course, resulting in a significant decrease in hunting-related accidents not only locally, but also throughout the country. According to National Safety Council data, individuals who participate in hunting have a significantly lower injury rate (8 injuries per 100,000 participants) than those involved in golf (104 injuries/100,00), soccer (900 injuries/100,00), baseball (2,089 injuries/100,00), or football (2,171 injuries/100,000). Injury

rates have steadily declined through the years as more and more individuals become educated. The course has evolved over time to include subjects that have become increasingly important in current times such as landowner relations, hunter ethics, and wildlife management. The Rhode Island Division of Fish & Wildlife in conjunction with volunteer instructors and sportsmen's clubs throughout the State administer the program.
*(http://www.dem.ri.gov/programs/bnatres/fishwild/huntered/h_history.htm)*

To ensure safety of all hunters and non-hunters, and to provide a quality hunt experience, hunting on Ninigret NWR will follow RIDEM regulations as well as refuge-specific regulations. The following are some regulations pertaining to hunting activities in the State of Rhode Island;

- A permit must be obtained for each individual deer taken in accordance with the bag limits for each season type.
- Legal hours for hunting deer are one half hour before sunrise to one half hour after sunset. All deer must be tagged in a conspicuous manner by the hunter killing same, immediately after taking, with the tag portion of the deer permit for the specific season (i.e., shotgun, archery, or muzzleloader). This tag must be separated from the permit with the appropriate month, day, or other information completed as required, and signed by the hunter. The tag must remain attached to the deer until the animal is processed for consumption or prepared for taxidermy. It will be considered *prima-facie* evidence of hunting without a valid deer permit if any portion of the deer permit/tag is altered in any manner.
- All deer must be checked by the hunter killing same within 24 hours of taking at a RIDEM biological check station, if in operation, or to an environmental police officer or by submitting a written kill report card as prescribed by RIDEM.
- Hunting, pursuing, or molesting deer below mean high tidal water, or while deer are swimming in any waters of the State is prohibited.
- The use of electronic deer calls is prohibited at all times.
- The use of decoys to attract deer is prohibited with the exception that such devices are permitted on private lands and only during the early archery season. In archery only designated areas, deer decoys may be used September 15 - January 31. When transporting deer decoys for the purpose of hunting, persons must wear 500 square inches of fluorescent orange visible from all sides as is currently required for shotgun deer hunting.
- Only one firearm or bow may be possessed in the field per hunter
- The use of natural or artificial scents, mouth or hand powered deer calls to attract deer is permitted.
- Pop-up blinds are permitted; however, muzzleloader hunters must display a minimum of 200 square inches of fluorescent orange visible from all directions during the muzzle-loading deer seasons. During shotgun deer season, 500 square inches of fluorescent orange is required.
- Proficiency testing is required of all archery hunters that are hunting deer on Block Island. The proficiency card is valid for two (2) years from the date of issue. The proficiency card must be carried while hunting.
- No loaded rifles or shotguns are allowed in or on vehicles.

- No shooting at, hunting, or pursuing game along, upon, or across a public highway is permitted.
- It is a violation of law, punishable by a fine and imprisonment, to fire "into" land for which one does not have landowner permission.
- Discharge of a firearm, including crossbows, within 500 feet of an occupied dwelling is prohibited.
- Archery deer hunting prohibited within 200 feet of an occupied dwelling.

Regulations that will be specific to Ninigret NWR and current regulations pertaining to all national wildlife refuges are found in Title 50, Section 32 of the Code of Federal Regulations. These include:

- The use of any drug on any arrow for bow hunting, including crossbows, on national wildlife refuges is prohibited. Archers may not have arrows employing such drugs in their possession on any national wildlife refuge.
- The distribution of bait and/or hunting over bait is prohibited.
- The use of nails, wire, screws or bolts to attach a stand to a tree, or hunting from a tree into which a metal object has been driven to support a hunter is prohibited.
- The use or possession of alcoholic beverages while hunting is prohibited.
- The use of spotlights, automotive headlights, or other artificial light for the purpose of spotting, locating, or taking any animal is prohibited. This regulation applies even if no weapons are in the vehicle.
- Anytime RIDEM hunting regulations specifies the requirement that hunters wear blaze orange clothing, hunters must adhere to those regulations both in amount of blaze orange required and in specified seasons. For example, both archery and firearms hunters are required to wear blaze orange during the firearm seasons in areas open to both types of hunts.
- Permanent tree stands are prohibited. All portable tree stands be removed from the refuge daily. The Service takes no responsibility for the loss or theft of tree stands left in the field.
- Tree stands must be marked with owner information (name, address, phone number).
- The use of motorized or non-motorized vehicles on the refuge will be prohibited, unless prior approval from refuge manager (e.g., accessibility for people with disabilities) is granted. This includes but is not limited to vehicles, all-terrain vehicles, dirt bikes, motorcycles, and bicycles.
- Marking (this includes but is not limited to, the use of flagging, bright eyes, tacks, and paint), cutting and/or removal of trees or vegetation is prohibited.
- Hunting is prohibited in areas designated as closed.
- Hunting is prohibited within 100 feet of a State, county, city roadway or refuge trail.
- Hunting on the Kettle Pond Unit is prohibited within 200 feet of the visitor center and parking lots.
- Hunting with the use of firearms is prohibited within 500 feet of an occupied dwelling.

- Archery deer hunting prohibited within 200 feet of an occupied dwelling.
- The use of buckshot is prohibited.
- Hunters are prohibited from taking any other wildlife.
- The refuge requires hunters to notify a refuge representative if they need to enter a closed area to retrieve game.
- Deer may not be field-dressed within 100 feet or a road or trail.
- We prohibit tracking 2 ½ hours after legal sunset. You must make a reasonable effort to retrieve all wounded deer. This may include next-day tracking except Federal holidays.
- We prohibit deer drives or anyone taking part in any deer drive. We define a "deer drive" as an organized or planned effort to pursue, drive, chase, or otherwise frighten or cause deer to move in the direction of any person or persons who are part of the organized or planned hunt and known to be waiting for the deer. We also prohibit organized deer drives without a standing hunter.
- Refuge hunting information, and the Rhode Island Hunting and Trapping Abstract will inform hunters of both State and refuge regulations. Refuge-specific hunting regulations, as listed in the "Ninigret National Wildlife Refuge Hunting Regulations," will be in effect.

**B. Hunter Orientation**

Hunter orientation of Ninigret NWR will be achieved by providing a hunting map of the refuge at the refuge office and the refuge website. The map has refuge trails, public use areas, closed areas, and local roads clearly defined. Participants in the hunting program will be able to access the refuge year-round to acquaint themselves with refuge trails and access points. Hunters can also obtain the refuge-specific regulations each year at the refuge office and the website. Hunters can address questions to refuge staff by calling, writing, e-mailing, or visiting the refuge office. Signs alerting the visiting public to educate themselves of the timing of hunting seasons will be posted at the refuge office and at access points and kiosks. The refuge would designate a minimum of one week that would provide hunters an opportunity to scout the refuge units in order to become familiar with the unit, habitats, refuge boundaries and facilities.

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## APPENDIX 4: Outreach Plan

Outreach plan for deer hunting plan, as part of the overall deer management plan, on Ninigret National Wildlife Refuge

Communication Goals:

- To educate the public about the necessity for and implementation of a deer hunting program at Ninigret NWR.
- To inform the public as to where to get information regarding availability of the program.

Message: Deer hunting will provide the public an opportunity to enjoy an American pastime, which is a priority recreational uses of the National Wildlife Refuge System, and provide a means to control deer populations in cooperation with refuge and State objectives and regulations.

Key Date: The final plan and environmental assessment will be submitted to the Fish and Wildlife Service Northeast Regional Office by December 15, 2011 for approval and issuing a Finding of No Significant Impact (FONSI). The approved plan, FONSI and notice to the Federal Register will be submitted by the Regional Office to the Washington Office by January 2012.

Strategy: To inform the public about the planned hunting seasons. Draft copies of the hunt plan will be sent to interested parties for review and comment. The public is being provided a 30-day review period to comment on the proposed plan. Notices are posted at the refuge office and on the refuge website.

Interested Parties:

**TOWN MANAGERS**

| | |
|---|---|
| William DiLibero | Town Administrator-<br>Charlestown |

**FEDERAL DELEGATION**

The Honorable U. S. Senator Reed
The Honorable U.S. Senator Whitehouse
The Honorable U.S. Congressman Cicilline
The Honorable U.S. Congressman Langevin

**STATE DELEGATION:**

| | |
|---|---|
| Dennis Algiere | State Senator - Westerly and Charlestown |
| Donna Walsh | State Representative- Charlestown |

**RIDEM:**

| | |
|---|---|
| Janet Coit | State Director - RIDEM |
| Catherine Sparks | Chief - RIDEM Division of Forest Resources |

**Newspapers:**
Providence Journal (State Wide Newspaper)
South County Independent
Narragansett Times
The Westerly Sun
The Day (New London, CT)
Chariho Times
The Newport Daily News
Standard Times
Charlestown Press
Wood River Press

**Online newsletters:**
Patch.com (several towns in State)
Naturalnews.com

**TV Stations:**
WPRI (Channel 12)
WJAR (Channel 10)
WABC6 (Channel 6)

**Radio Stations:**
Citadel Broadcasting:
92.3 Pro FM
LiteRock 101
WPRO 630 am
Latina 100.3

**Facebook**
Keyword: Rhode Island National Wildlife Refuge Complex

**Website**
http://www.fws.gov/ninigret/complex/

**Fishing and Hunting Groups:**
U.S. Sportsmen's Alliance: Frank Price,
United Fly Tyers of Rhode Island: Ed Larbardo,
Fishing and Hunter Journal of Providence Journal: Tom Meade,
RI Saltwater Angler Association: Steven Medeiros,
RI Ducks Unlimited: Stuart Demirs,
FishingRI.com
HuntRI.com

**Appendix 5: Draft News Release Regarding the Hunt Program**

## News Release Regarding the Hunt Program

For Immediate Release- TBD
For Further Information Contact:
Charlie Vandemoer, Refuge Manager at 401.364.9124 x11 or
Juancarlos Giese, Deputy Refuge Manager: 401.364.9124 x18

**Deer Management Hunt on the Ninigret and Block Island National Wildlife Refuges**

The U. S. Fish and Wildlife Service is addressing how best to manage white-tailed deer on two national wildlife refuges in the State. Through a Draft Environmental Assessment, Draft Compatibility Determination and related documents which describe alternative methods considered in managing deer on these refuges, the refuge has held public meetings and sought public involvement from November through December 2011. The areas being open for deer hunting for the 2012-2013 hunting season are the Block Island National Wildlife Refuge located in the town of New Shoreham, RI, and the Ninigret National Wildlife Refuge in Charlestown, RI.

White-tailed deer are a native species on the mainland which are valued for their role in the environment and by many simply for the chance to see them. But very high densities of white-tailed deer raise questions about how they affect our natural communities, and other effects such as their relationship to ticks and the occurrence of Lyme disease, collisions with vehicles, and damage to landscaping and gardens.

Some people are surprised to learn that hunting is allowed on a national wildlife refuge, but these lands have been established not only to preserve wild places, but also to promote wildlife-dependent recreation when compatible with the purposes for which the refuges were established.

Wildlife-dependent recreation includes environmental education, wildlife observation, wildlife photography, wildlife interpretation, hunting and fishing. All national wildlife refuges in the State are open to fishing, and goose and dove hunting is also allowed on a portion of the Trustom Pond National Wildlife Refuge in South Kingstown.

The deer hunting season will have dates set seasonally on the Ninigret Pond, Kettle Pond and Lewis Trail units of the Ninigret National Wildlife Refuge. The Barrier Beach unit will run concurrently with State regulations. On the Block Island National Wildlife Refuge, the deer hunting season will run from November through February on the Beane Point, Kurz, Sandy Point and Wash Pond units. Please contact the refuge headquarters at 401-364-9124 or visit the website at http://www.fws.gov/ninigret/complex/ for the most current refuge hunt dates and

regulations.

*The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people. We are both a leader and trusted partner in fish and wildlife conservation, known for our scientific excellence, stewardship of lands and natural resources, dedicated professionals and commitment to public service. For more information on our work and the people who make it happen, visit http://www.fws.gov.*

## APPENDIX 6: Public Comment Summary and Responses

The Ninigret National Wildlife Refuge Draft Deer Management Environmental Assessment and Deer Management Plan were released for 30 days of public review and comment from November 7 through December 6, 2011. On November 10, 2011 a public scoping was held in the town of Charlestown at the refuge's Kettle Pond Visitor Center. Comments were collected via notes on flip charts and comment cards at the meeting, and later, through emails, letters and comment cards.

At the meeting, 22 comments were captured on the flip charts and 3 comment cards were submitted. Following the meeting, one email message and three letters came in to the refuge. Two of these voiced opposition to the hunt plan, one was in favor and the fourth expressed safety concerns.

The comments are addressed below, and are divided into four sections: Ecological Effects, Law Enforcement and Safety, Refuge Management Plan Alternatives, and Visitor Services and Recreational Opportunities.

Ecological Effects

*Several people expressed concern about the effects of deer feeding on landscape plantings as well as natural vegetative communities and nursery plants.*

The effect of deer on plants - native plants, plant community dynamics, and neighbors' landscape plantings- is one of the main reasons that the refuge is implementing a deer management plan. With lower deer densities, the foraging pressure will be reduced and it is anticipated that native plant communities will benefit and that there will be less browsing on landscape plantings.

*Several people mentioned the threat of Lyme and other tick-borne disease. One person was in favor of eradicating the deer to prevent tick-borne disease.*

A lower deer density will reduce the number of ticks, which will most likely lead to a lower incidence of Lyme and other tick-borne disease. Deer are involved in disease transmission mainly by helping to support tick reproduction by providing adults with food in the form of a blood meal, and transportation. The black legged or deer tick (*Ixodes scapularis*), the primary vector of Lyme disease, is dependent on the white-tailed deer for reproduction. Larval and nymph stages (immature ticks that cannot reproduce) of the deer tick feed on birds and small mammals. The adult female tick needs a large 3-day blood meal from a deer before she can reproduce and lay her 2000 or more eggs. Deer are the primary host for the adult deer tick and are integral to the reproductive success of the tick.

Numerous studies have shown that abundance and distribution of deer ticks are correlated with deer densities. When the deer population was reduced by 74% at a 248-acre (100 ha) study site in

Bridgeport, Connecticut, for example, the number of nymphal ticks collected at the site decreased by 92%.

The relationship between deer abundance, tick abundance, and human cases of Lyme disease was well documented in the Mumford Cove community in Groton, Connecticut, from 1996 to 2004. The deer population in Mumford Cove was reduced from about 77 deer per square mile to about 10 deer per square mile (4 deer per square kilometer) after 2 years of controlled hunting. After the initial reduction the deer population was maintained at low levels. Reducing deer densities to 10 deer per square mile (4 deer per square kilometer) was adequate to reduce by more than 90% the risk of humans contracting Lyme disease in Mumford Cove.

Additional evidence of the efficacy of deer reduction in reducing the incidence of tick-borne disease comes from Great Island in Massachusetts. When deer were reduced by approximately 90% the rate of Lyme disease infection was reduced from over 3 cases per 100 people per year before deer removal to less than 0.2 cases per 100 per year after removal. More specifically, when the density was reduced to 6-10 deer per square mile at this site, the incidence of Lyme disease was reduced by 80%.

*There were several comments that addressed the desire that deer and humans just "get along."*

The refuge is mandated to protect and enhance a diversity of wildlife and habitats, including such trust resources as migratory birds. The refuge is also obligated, by law, to protect the biological integrity of its lands. In order to do this, a balance of species and habitats must be maintained. The overabundance of deer is threatening native plants and the natural functioning of ecological communities. If the refuge does nothing, the natural habitats will continue to degrade and native wildlife and plants will suffer.

*One person said that they see few deer and do not think that overpopulation is an issue.*

The refuge uses the best available information to estimate the population in the refuge. Population estimates done using a standardized technique are completed annually by RIDEM. Current deer densities are estimated at 24 per square mile.

*Why do we need wildlife biologists if they cannot come up with humane and scientific methods for keeping the deer population under control?*

Refuge biologists and managers use the best available scientific research results and information to inform their decisions on management.On refuges, wildlife biologists are responsible for a variety of things, depending on the enabling legislation of the refuge and other relevant factors. Refuge biologists may concentrate on management of a particular species, such as the endangered piping plover, or management of a specific habitat, such as wetlands. More often, a refuge biologist has a wide range of responsibilities that may include: habitat management and restoration, wildlife and plant surveys protection and management, nonnative/invasive plant control, fire management, and collaboration with partners on projects of regional importance.

*Why are we coming up with the same solutions that could have come out of 1600s?*

In the 1600s the natural predators of the deer - mountain lion and bobcat, as well as wolves - existed in Rhode Island and kept deer populations at lower densities than they are at present.Technology and medical research have given us a few more options to choose from, ones that are presented in Appendix 1; however, they either not effective on non-insular herds, infeasible or too costly to be further considered in this situation.

*Why does the term "wildlife management" have to be synonymous with killing?*

Wildlife managers use a host of techniques to control the effects of one species on others. These include fencing, chemical deterrents, noise, application of herbicide, mowing, reintroduction, relocation, and lethal methods. Deer hunting will help control the population while providing a wildlife-dependent recreational opportunity to many Americans.

Law Enforcement and Safety

*A correspondent communicated the belief that hunting increased the number of collisions of deer with vehicles during the hunting season.*

While collisions of cars with deer peak in the fall (November, according to State Farm Insurance), studies explicity examining the relationship of hunting to collision rate, have shown no effect, or effects only on opening day (Karns 2008, Karns et al. 2011). Deer tend to hide away in their own territories, rather than flee, during hunting season. Greater collision rates are more likely due to more travel by bucks, as well as does, related to mating combined with the fact that during these months nighttime, and its concomitant limits on visual perception, comes earlier – during times of heavy vehicular use.

Deer, even when startled or hunted, tend to stay in their own territories. What causes changes in patterns of movement is reproduction, when deer may travel in search of mates, and the change of season. During the mating season, extending from mid-October into December, depending on latitude, deer will leave their territories in search of a mate. Bucks, especially, will travel far. This overlaps with migration (or small-scale movement) in many areas, when summer foods dwindle, and deer may switch to winter ranges to exploit different food resources, as well as to escape deep snow and chilling winds. Perhaps because more deer movement occurs in a time of year when daylight is dwindling, and drivers haven't gotten in the habit of slowing down (as they will have by spring), collisions happen more often than during the rest of the year.

*A suggestion was received to divide the hunt units into quarters and assign each hunter his or her own quarter.*

The refuge is considering dividing up some of the units into hunt zones and establishing a maximum number of hunters assigned to each unit. This may be done in any unit where it is seen to increase hunter safety and/or increase the quality of the hunt experience.

*One writer recommended the removal of cedar trees along the highways so that the deer "don't come to the highways."*

Deer are found on the highways for two major reasons. First of all, highways may be in their travel route. In this case, there is no special attraction to the highway, it is just an obstacle to be crossed. Deer travel in search of mates, in migration, and when traveling from a summer territory to a winter one to find better food and protection from the elements. A highway or other road may intersect a deer's territory, as well. If plantings on highways include ones highly palatable to deer, they may travel there to eat them. Some states are using plants along highways that deer do not prefer to try to lower the deer/vehicle collision rate.

Cedar is eaten by deer when it is young and small, more so than when it is mature. Large cedar trees should not "attract" deer to highways, although they may be browsed upon, or a buck may rub on one, if it comes across it during its travels. A reduction of the deer population as a whole should result in fewer deer/vehicle collisions.

Refuge Management Plan Alternatives

*One writer suggested we sterilize the deer, which would provide a "permanent" and "humane" solution. The writer used as an example the case of the San Francisco SPCA sterilizing and relocating over 200 deer from an island.*

Research revealed that the island in question is Angel Island in San Francisco Bay and that over 200 deer were trapped and relocated. Several years later, thirty percent of the female deer on Angel Island were "sterilized" by chemosterilant implants. Unfortunately, the whole episode was neither successful, nor humane. Deer suffered and died because of the trapping and relocation. Additionally, several years later, the population left on Angel Island regrew to its original size despite sterilization efforts.

A total of 215 deer was captured in 1981. Twelve died before relocation – from capture stress (2), physical injuries (5), pre-existing diseases (2) and pre-existing poor condition (3). Fifteen of the relocated deer were radio-collared to measure survival. After one year, only 15% of the radio-collared deer were still alive, compared to 72% in a study of a nearby natural (i.e., not relocated) population. Another study, on mule deer, also demonstrated a lower survival rate (45%) for relocated deer as compared to the indigenous population (85%) as measured during a 15-month period.

The sterilization effort took place in 1984. A total of 1,456 trap nights resulted in 205 captures, many of which were recaptures. Three deer mortalities resulted from handling. Thirty does received hormone implants – 30% of the estimated 100 female deer on the island – but not enough to make for a "permanent" solution for the population. It is estimated that 80-90% of the females alive in any given year must have implants for population control to be realized. Thus, even on an isolated island with no immigration, population control was not possible. At Ninigret NWR, with porous borders allowing for the entry of new animals, sterilization efforts would have to be ongoing (see Appendix 1 for more details).

See Appendix A for further discussion of deer management techniques.

*A suggestion was made to look at "extermination" of deer for public safety.*

At a density of 12-15 deer per square mile, public safety will increase. That is to say, incidence of tick-borne disease and vehicle/deer collisions are expected to decrease. Because deer are native to the area and contribute, at appropriate densities, to the natural functioning of the habitats, there is no consideration of complete extermination.

*One commenter suggested closing off areas to deer to allow them to regenerate.*

This idea might work for small areas; however, the areas affected cover most of the refuge. To do this, a fence line would have to be cleared and a very tall and stout fence built and then all the deer from the inside would have to be removed. It would be expensive, labor-intensive, impractical and destructive to the environment.

Visitor Services and Recreational Opportunities

*Concern was expressed that hunting on Ninigret Pond Unit would affect public safety and recreational opportunities at the adjacent town-owned Ninigret Park.*

Every effort will be made to ensure public safety. Hunters must possess a valid State hunting license and take a proficiency test, if applicable. Additionally, they must follow all State regulations concerning hunting. For instance, a hunter using a firearm or a crossbow must be at least 500 feet from a residence. Hunters will receive information about regulations as well as maps with their permits. Also, they will have designated dates to scout areas. Thus public safety will be ensured.

No recreational opportunities on the adjacent Ninigret Park will be affected directly, although the sound of increased gunshot will be audible. The sound of gunshot is already heard at Ninigret Park due to waterfowl hunting on Ninigret Pond. The refuge's hunt will produce more of this.

## APPENDIX 7: Letters Requesting Comments

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Rhode Island National Wildlife Refuge Complex
50 Bend Rd., Charlestown, RI 02813
Phone (401) 364-9124 Fax (401) 364-0170

Catherine Sparks
State of Rhode Island, Division of Fish and Wildlife
235 Promenade Street
Providence, RI 02908-5767

November 8, 2011

Dear Ms Sparks:

The U. S. Fish and Wildlife Service is addressing how best to manage white-tailed deer (*Odocoileus virginianus*) populations on the Ninigret National Wildlife Refuge in Charlestown, RI, and the Block Island National Wildlife Refuge in New Shoreham, RI.

Enclosed please find our Draft Environmental Assessments and related documents which identify and evaluate the alternative methods we have considered in managing deer populations on each National Wildlife Refuge. Our Draft preferred alternative for both National Wildlife Refuges is Alternative C, controlled public deer hunting. Other documents included are Draft compatibility determinations (how well does the proposed action meet the purposes and objectives of the National Wildlife Refuge?), and Draft hunt plans which detail how deer hunting would be allowed under the Draft preferred alternatives.

All of these documents are available for public comment from November 8, 2011 through December 7, 2011. Comments including identification of any concerns or suggestions for improvements in the documents or the alternatives from the State Division of Fish and Wildlife would be most welcome. We look forward to any comments you may have by December 7, 2011.

In addition, we respectfully request a letter indicating whether or not the State of Rhode Island, Division of Fish and Wildlife are supportive of Implementation of either Alternative A, B, or C.

Please feel free to contact me directly or Juancarlos Giese, Deputy Refuge Manager, with any comments or questions you may have.

Sincerely,

CHARLES E. VANDEMOER
Refuge Manager
Rhode Island National Wildlife Refuge Complex

Attachments (2)

# United States Department of the Interior

FISH AND WILDLIFE SERVICE

Rhode Island National Wildlife Refuge Complex
50 Bend Rd., Charlestown, RI 02813
Phone (401) 364-9124 Fax (401) 364-0170

Chief Sachem Matthew Thomas
Narragansett Indian Tribe
4375-B South County Trail
Charlestown, RI 02813

November 8, 2011

Dear Chief Sachem Thomas:

The U. S. Fish and Wildlife Service is addressing how best to manage white-tailed deer (*Odocoileus virginianus*) populations on the Ninigret National Wildlife Refuge in Charlestown, RI, and the Block Island National Wildlife Refuge in New Shoreham, RI.

Enclosed please find our Draft Environmental Assessments and related documents which identify and evaluate the alternative methods we have considered in managing deer populations on each National Wildlife Refuge. Our Draft preferred alternative for both National Wildlife Refuges is Alternative C, controlled public deer hunting. Other documents included are Draft compatibility determinations (how well does the proposed action meet the purposes and objectives of the National Wildlife Refuge?), and Draft hunt plans which detail how deer hunting would be allowed under the Draft preferred alternatives.

All of these documents are available for public comment from November 8, 2011 through December 7, 2011. Comments including identification of any concerns or suggestions for improvements in the documents or the alternatives from the Narragansett Indian Tribe would be most welcome. We look forward to any comments you may have by December 7, 2011.

Please feel free to contact me directly or Juancarlos Giese, Deputy Refuge Manager, with any comments or questions you may have.

Sincerely,

CHARLES E. VANDEMOER
Refuge Manager
Rhode Island National Wildlife Refuge Complex

Attachments (2)

# United States Department of the Interior

FISH AND WILDLIFE SERVICE

Rhode Island National Wildlife Refuge Complex
50 Bend Rd., Charlestown, RI 02813
Phone (401) 364-9124 Fax (401) 364-0170

Thomas Gentz, Town Council President
Town of Charlestown
4550 South County Trail
Charlestown, RI 02813

November 8, 2011

Dear Mr Gentz:

The U. S. Fish and Wildlife Service is addressing how best to manage white-tailed deer (*Odocoileus virginianus*) populations on the Ninigret National Wildlife Refuge in Charlestown, RI, and the Block Island National Wildlife Refuge in New Shoreham, RI.

Enclosed please find our Draft Environmental Assessment and related documents which identify and evaluate the alternative methods we have considered in managing deer populations on the Ninigret National Wildlife Refuge. Our Draft preferred alternative is Alternative C, controlled public deer hunting. Other documents included are a Draft Compatibility Determination (how well does the proposed action meet the purposes and objectives of the National Wildlife Refuge?), and Draft hunt plan which details how deer hunting would be allowed under the Draft preferred alternative.

All of these documents are available for public comment from November 8, 2011 through December 7, 2011. Comments including identification of any concerns or suggestions for improvements in the documents or the alternatives from the Town of Charlestown would be most welcome. To fully consider any comments the Town of Charlestown may have, we request receipt of any by December 7, 2011.

If you feel our attendance at a Town Council meeting to describe the process, the alternatives considered including the preferred alternative, or to address any questions the Town may have would be helpful, the Service would be happy to participate.

Please feel free to contact me directly or Juancarlos Giese, Deputy Refuge Manager with any comments or questions you may have.

Sincerely,

CHARLES E. VANDEMOER
Refuge Manager
Rhode Island National Wildlife Refuge Complex

Attachment (1)

# United States Department of the Interior

FISH AND WILDLIFE SERVICE

Rhode Island National Wildlife Refuge Complex
50 Bend Rd., Charlestown, RI 02813
Phone (401) 364-9124 Fax (401) 364-0170

Kimberley H. Gaffett, First Warden
Town of New Shoreham
P.O. Box 220
Block Island, RI 02807

November 8, 2011

Dear First Warden Gaffett:

The U. S. Fish and Wildlife Service is addressing how best to manage white-tailed deer (*Odocoileus virginianus*) populations on the Ninigret National Wildlife Refuge in Charlestown, RI, and the Block Island National Wildlife Refuge in New Shoreham, RI.

Enclosed please find our Draft Environmental Assessment and related documents which identify and evaluate the alternative methods we have considered in managing deer populations on the Block Island National Wildlife Refuge. Our Draft preferred alternative is Alternative C, controlled public deer hunting. Other documents included are a Draft Compatibility Determination (how well does the proposed action meet the purposes and objectives of the National Wildlife Refuge?), and Draft hunt plan which details how deer hunting would be allowed under the Draft preferred alternative.

All of these documents are available for public comment from November 8, 2011 through December 7, 2011. Comments including identification of any concerns or suggestions for improvements in the documents or the alternatives from the Town of New Shoreham would be most welcome. To fully consider any comments the Town of New Shoreham may have, we request receipt of any by December 7, 2011.

If you feel our attendance at a Town Council meeting to describe the process, the alternatives considered including the preferred alternative, or to address any questions the Town may have would be helpful, the Service would be happy to participate.

Please feel free to contact me directly or Juancarlos Giese, Deputy Refuge Manager with any comments or questions you may have..

Sincerely,

CHARLES E. VANDEMOER
Refuge Manager
Rhode Island National Wildlife Refuge Complex

Attachment (1)

## APPENDIX 8: Responses from the State of Rhode Island and the Narragansett Tribe

Rhode Island
Department of Environmental Management

DIVISION OF FOREST ENVIRONMENT
401 222-1700
Ext 2301
235 Promenade Street, Rm 434
Providence, RI 02908-5767

December 7, 2011

Charlie Vandemoer, Refuge Manager
US Fish and Wildlife Service
Attn: Deer Management
50 Bend Road
Charlestown, RI

Re: Deer Management Planning Process for Ninigret and Block Island Refuges

Dear Mr. Vandemoer:

On behalf of the RIDFM Division of Fish and Wildlife I am writing in support of two proposals (Draft Environmental Assessment) for the management of white-tailed deer at both Ninigret Refuge in Charlestown, RI and the Block Island Refuge in New Shoreham, RI. Management of over abundant deer populations in portions of the state is a major environmental issue of concern that if left unchecked has many consequences for Rhode Island residents, including human health and safety issues resulting from deer auto strikes and tick borne disease, nuisance problems, property damage and ecological consequences for native habitats. We support the preferred alternatives at this time; however, we encourage the Service to consider the recommendations we propose herein and periodically re-evaluate the program and adapt additional measures necessary to achieve the desired goal of a lower deer density. We also strongly support and encourage deer hunting as one of the six priority public uses at both refuges and encourage the Service to maintain and/or expand this public use over the entire RI Refuge complex.

With respect to the Ninigret Refuge Environmental Assessment, we agree that Alternative B would provide the best possible results for reducing the deer density and associated consequences of too many deer and could be implemented with minimal impact to other users of the refuge. Deer season occurs simultaneously at other RI State owned wildlife management areas with minimal conflicts between user groups. A combination of educational outreach, signage and hunter/user regulations (required use of fluorescent orange by all users during the season) can support co-existence between hunters and users and could be effectively implemented by the Service. Likewise, with proper education of both hunters and users, as well as effective creation of hunt/no hunt zones, we do not feel it would be necessary to close the refuge in its entirety to other users during the hunt, especially during the archery only portions of the proposed hunting season.
The specific elements of the Ninigret hunt plan include hunting Ninigret Pond and Lewis Trail units by muzzleloader for a 10 day period. This period of time is in our opinion too restrictive and may not provide the desired end result. We recommend an extension of this period to not less than three

(3) weeks commencing in late November, as proposed, and covering the period of the statewide open shotgun portion of the deer season ending in mid-December. The Kettle Pond unit likewise uses an appropriate method (archery); however, the period proposed is too restrictive. With archery, our experience shows that few conflicts generally occur between other users and archers. This is because the method requires stealth; hunters use elevated platforms to get close to deer but away from people. With archery, we recommend that this unit be opened for the period November 1 through January 31, which the department believes will better achieve the intended result. We are in agreement with the method applied to the Barrier Beach unit and feel this approach will be most effective at achieving the desired end result.

With respect to the Block Island Refuge Environmental Assessment, we agree that Alternative B would be the most effective for managing deer and will produce the best possible result for human health, safety and environmental benefits outlined in the management plan. We recommend that the three units to be opened to hunting will be most effective with few restrictions on dates and length of season. At Sandy Pond Unit, it is recommended that you consider opening the area for the entire month of February on dates corresponding to the DEM/Town agreed dates in regulation. At the Wash Pond Unit, we recommend archery only hunting for the entire portion of the season beginning November 1 through February 29. Since no gun hunting will be allowed on this unit, the lower intensity of archery hunting should not cause conflicts with any other users or the Town of New Shoreham. At the Beane Pond Unit, we also recommend allowing hunting days during the entire period of January on open dates permitted by DEM/Town. We wish to emphasize that opening Sandy Pond and Bean Point, as proposed, for only 8 and 11 days respectively during January and February so limits hunters that it may not produce the Services' desired end result of removing deer from the parcel. Making minor modifications to the Service's proposal as noted above will still retain the "special regulations" approach taken by the Service (fewer hunting days); however, will allow the additional time necessary for hunters to access the parcels for deer hunting.

In summary, we support the Services efforts to open both Ninigret Refuge and Block Island Refuge to deer hunting, for many reasons. First, opening the refuges to hunting will permit one of six priority public uses encouraged at Ninigret and Block Island Refuges. At both refuges, hunting is a wildlife dependent recreation that is currently not provided or is severely limited. Opening the refuges to hunting is a positive action encouraged by DEM. Second, the deer hunt plans for both refuges will begin the process to reduce deer numbers to levels that are better for environmental quality and human health and safety issues. We support your efforts in both areas of interest to provide hunting recreation and manage deer numbers to levels that are more ecologically sustainable.

We appreciate the opportunity to comment on this proposal and look forward to assisting you in any way necessary during the implementation phase of the deer hunting management plan.

Sincerely yours,

Catherine Sparks

Catherine Sparks, Chief
DEM Forestry/Fish and Wildlife

cc: Tefft, Osenkowski

**Refuge's response to suggestions from RIDEM**

RIDEM is in favor of refuge hunt programs. They support the refuge's efforts to reduce deer numbers and to provide recreation in the form of hunting. They made suggestions for three of the four units, being satisfied with the proposal for the Barrier Beach unit. They suggested increasing the number of days units are open for hunting, and feel this will better enable the refuge to meet its objective of decreasing deer numbers. They are of the opinion that multiple use can be supported (i.e., the refuge does not need to be closed to other uses while hunting is taking place). Specifically, they propose:

1. Increasing the muzzleloader hunt period at Ninigret Pond and Lewis Trail units from 10 days to three weeks, to coincide with the statewide open shotgun portion of the deer season, which commences in late November and ends in mid-December.
2. Increasing the length of the archery-only hunt at the Kettle Pond unit from one month, January, to 3 months, November 1 to January 31.

The refuge considers it of great importance to balance quality opportunities for hunting with other recreational uses of its lands. Although the state runs deer and other wildlife hunts on its lands without restricting other recreational uses (e.g., closing trails), the refuge has a different perspective about the appropriateness of this on refuge lands. The refuge feels that non-hunting visitors are better served by eliminating the actual or perceived dangers of being near hunting operations, and the sound of gunshot. Additionally, all of our units are small with extensive trail systems, so the chance of encounters with hunters, or being near someone hunting would be high.

We agree with RIDEM that archery poses less danger and is much quieter than hunting with firearms. However, the unit where we propose archery hunting is the Kettle Pond unit where our headquarters and Visitor Center are located. Additionally, it is adjacent to an Audubon sanctuary and private residences. Dogs are allowed on leash on the trails there, and many young children come with their parents in strollers or walking. Many local residents walk here on a daily basis, including a half hour before sunrise and a half hour after sunset when visibility is low. To maximize safety, we feel it is best to close the trails while archery is taking place. We also feel that many visitors, especially those with small children, will have a higher perception of danger if they view a camouflaged hunter in the woods, or someone carrying out their harvest.

To maximize safety and balance the quality of priority public uses we will not have units open to non-hunters during hunting dates. Thus, we are restricting the number of hunting days to provide a balance of recreational opportunities to our visitors.

**Response from Narragansett Tribe**

Juancarlos Giese, deputy refuge manager, attended a meeting with Dinalyn Spears, Narragansett tribal planning and natural resources director, and Greg Soter, assistant director on January 12, 2012 to discuss the Ninigret NWR deer management plan. Ms. Spears and Mr. Soter were very enthusiastic to discuss the process by which the refuge incorporated all available information into the plan and how the staff decided upon the three alternatives. From their perspective, the Tribe is supportive of alternative C. The only addition that they would make is for the refuge to consider setting aside days or permits specifically for tribal members to harvest deer. Ms. Spears and Mr. Soter were told that the refuge will not include this in this environmental assessment and hunt plan. We agreed to continue to work together on this topic in future years and the refuge will have the flexibility to update the environmental assessment and hunt plan as necessary. Both Ms. Spears and Mr. Soter were satisfied with this response.

Tribal members were also interested in the possibility of working with refuge biologists. They would like to incorporate some of the elements, such as population management and harvest information, of the deer management plan on tribal lands and natural resource plans.

**APPENDIX 9: CFR Language**

C: We allow big game hunting for white-tailed deer in accordance with State regulations, by refuge permit, subject to the following conditions:

1. We require hunters to submit a Big Game Hunt Application/Permit (FWS Form 3–2356) to be selected to hunt on the refuge. Hunting brochures containing hunting application procedures, seasons, bag limits, methods of hunting, maps depicting areas open to hunting, and the terms and conditions under which we issue hunting permits are available at the refuge administration office and on the refuge's Web site.
2. We require hunters to possess a valid Rhode Island hunting license and all required stamps, a valid government-issued photo identification, and a valid hunting permit issued by the refuge at all times while on refuge property.
3. Hunters are prohibited from taking any other wildlife.
4. We require hunters to notify a refuge representative if they need to enter a closed area to retrieve game.
5. The refuge only allows shotguns (slugs only), muzzleloaders and archery equipment to harvest deer.
6. The use of any drug on any arrow for bow hunting, including crossbows, on national wildlife refuges is prohibited. Archers may not have arrows employing such drugs in their possession on any national wildlife refuge.
7. The distribution of bait and/or hunting over bait is prohibited.
8. The use of nails, wire, screws or bolts to attach a stand to a tree, or hunting from a tree into which a metal object has been driven to support a hunter is prohibited.
9. The use or possession of alcoholic beverages while hunting is prohibited.
10. The use of spotlights, automotive headlights, or other artificial light for the purpose of spotting, locating, or taking any animal is prohibited. This regulation applies even if no weapons are in the vehicle.
11. Anytime RIDEM hunting regulations specifies the requirement that hunters wear blaze orange clothing, hunters must adhere to those regulations both in amount of blaze orange required and in specified seasons. For example, both archery and firearms hunters are required to wear blaze orange during the firearm seasons in areas open to both types of hunts.
12. Permanent tree stands are prohibited. All portable tree stands be removed from the refuge daily. The Service takes no responsibility for the loss or theft of tree stands left in the field.
13. Tree stands must be marked with owner information (name, address, phone number).
14. The use of motorized or non-motorized vehicles on the refuge will be prohibited, unless prior approval from refuge manager(e.g. accessibility for people with disabilities) is granted. This includes but is not limited to vehicles, all-terrain vehicles, dirt bikes, motorcycles, and bicycles.
15. Marking (this includes but is not limited to, the use of flagging, bright eyes, tacks, and paint), cutting and/or removal of trees or vegetation is prohibited.
16. Hunting is prohibited in areas designated as closed.
17. Hunting is prohibited within 100 feet of a State, county, city roadway or refuge trail.

18. Hunting on the Kettle Pond Unit is prohibited within 200 feet of the visitor center and parking lots.
19. Hunting with the use of firearms is prohibited within 500 feet of an occupied dwelling.
20. Archery deer hunting prohibited within 200 feet of an occupied dwelling.
21. The use of buckshot is prohibited.
22. Deer may not be field-dressed within 100 feet or a road or trail.
23. We prohibit tracking 2 ½ hours after legal sunset. You must make a reasonable effort to retrieve all wounded deer. This may include next-day tracking except Federal holidays.
24. We prohibit deer drives or anyone taking part in any deer drive. We define a "deer drive" as an organized or planned effort to pursue, drive, chase, or otherwise frighten or cause deer to move in the direction of any person or persons who are part of the organized or planned hunt and known to be waiting for the deer. We also prohibit organized deer drives without a standing hunter.
25. Refuge hunting information, and the Rhode Island Hunting and Trapping Abstract will inform hunters of both State and refuge regulations. Refuge-specific hunting regulations, as listed in the "Ninigret National Wildlife Refuge Hunting Regulations," will be in effect.

## APPENDIX 10: Section 7 ESA Evaluation



# Intra-Service Section 7 Biological Evaluation Form
## Region 5

Originating Person: Doris Stolley Date Submitted: 12/07/11

Telephone Number: 401-364-9124, ext. 16

I. **Service Program and Geographic Area or Station Name:**

National Wildlife Refuge System, Ninigret National Wildlife Refuge, Charlestown, Rhode Island.

II. **Flexible Funding Program (e.g. Joint Venture, etc) if applicable:**

Not applicable

III. **Species/Critical Habitat:** List federally-listed, proposed, and candidate species and designated or proposed critical habitat that occur or may occur within the action area:

1) Federally-listed threatened - Piping plover (*Charadrius melodus*), Atlantic coast population. There is no designated critical habitat for breeding populations of the Atlantic coast piping plover.
2) Federally listed threatened - Northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*): No critical habitat has been designated. There are no known occurrences of the Northeastern beach tiger beetle on Ninigret NWR. However, Ninigret NWR's Barrier Beach Unit is within the area identified in the Recovery Plan as a potential reintroduction site.
3) Candidate species - New England cottontail (*Sylvilagus transitionalis*): No critical habitat has been proposed. There has been no documentation of this species on Ninigret NWR since 2005. However, it is within a focal area identified as high priority for reintroduction, and the Refuge is actively managing habitat to support this species in the future.

IV **Location:** Location of the project including County, State, and section, township, & range. Attach map(s) if appropriate. Include any information that will assist in evaluating potential effects (e.g., location of specie/habitat, distance and direction to nearest town, etc.):

Ninigret NWR is located in Washington County, Rhode Island, in the town of Charlestown. It is divided into four units: Lewis Trail, Kettle Pond, Ninigret Pond and Barrier Beach (see attached map). Piping plover (breeding, migrating), New England cottontail (potential) and Northeastern beach tiger beetle (potential) habitat is located on the barrier beach unit. Potential New England cottontail habitat is also located on Ninigret Pond Unit, and this unit is actively managed for shrubland and thicket habitat for this species. There is also a large, predator-proof pen for captive-bred NEC located on Ninigret Pond Unit.

IV. **Project Description:** Describe proposed project or action or, if referencing other documents (e.g. the Grant Proposal), prepare an executive summary containing the pertinent information (attach additional pages as needed):

The Refuge proposes a managed deer hunt as the preferred alternative for deer management as described in the Deer Management Environmental Assessment.

VI. **Determination of Effects:**

**(A) Description of Effects:** Describe the effects of the action(s) on the species and critical habitats listed in item III. For each section 7 determination made below, attach an explanation of such determination for all applicable species or critical habitat. Documentation should include a brief discussion of each of the following: 1) species status both within and outside the action area (population trends), distribution in and around the action area, 2) habitat status (critical or non-critical); species use, such as breeding, sheltering, and feeding in and around the action area, and 3) impacts of the action - how the proposed action will affect species/critical habitat (consider direct, indirect, and cumulative effects). Beneficial and adverse effects, as well as actions to avoid or minimize adverse effects, should be identified (attach additional pages as needed).

**Piping plover:** The federally threatened Piping plover nests on many of the barrier beaches of southern Rhode Island. Its population in the state and on the East Coast of the U.S. is increasing. Since its 1986 listing, the Atlantic Coast piping plover population increased 234%, from approximately 790 pairs to an estimated 1,849 pairs in 2009, and the U.S. portion of the population has almost tripled, from approximately 550 pairs to an estimated 1,597 pairs. The largest net population increase between 1989 and 2009 has occurred in New England (266%). The number of pairs monitored by the Refuge was 10 in 1986, increasing to 86 in 2011. Some portion of the increase may be attributed to more beaches being monitored by Refuge staff.

Overall productivity for the Atlantic Coast population 1989-2006 was 1.35 chicks fledged per pair (annual range = 1.16-1.54) with New England states averaging 1.44. The refuge has productivity records staring in 1992. Between 1992 and 2006, productivity was higher than the New England average in ten of the 15 breeding seasons.

Of the proposed hunting areas, piping plover occur only on the beaches and dunes of the Barrier Beach Unit, where they may breed from late March/early April through mid-August. Piping plover may also stop here to feed while in migration – through mid-September. They also occur on the adjoining barrier beach State property. The habitat is used for nesting, feeding and brood-rearing. Because the proposed hunting dates do not coincide with piping plover presence on the beach, or in the area at all, we do not anticipate any effects.

**Northeastern beach tiger beetle:** There are no known occurrences of the Northeastern beach tiger beetle on Ninigret NWR. While, the Barrier Beach Unit is within the area identified in the Recovery Plan as a potential reintroduction site, it is not under consideration for a reintroduction. Vehicles are permitted to drive on the beach, making it unsuitable for a reintroduction. Thus, the proposed action has no present or future effect on this species.

**New England cottontail:** The New England cottontail (NEC) has not been documented on Ninigret NWR since 2005, and is in drastic decline throughout its range. Ninigret NWR is ranked as the number one site for reintroduction by the NEC Captive Breeding Working Group, represented by six state wildlife agencies, USFWS and other partners, and will most likely receive reintroduced, captive-bred NEC in 2012. NEC are most often found in shrubland, thicket or young forest habitat with stem densities so thick that it is difficult for people to walk through them. Because of this, it is likely that few hunters will venture into NEC habitat, and that NEC will be able to easily retreat into safe habitat if disturbed in more open areas. NEC may be interrupted from foraging or resting for a short time, if a hunter passes near them.

Additionally, there is a facility for NEC on Ninigret – a 100 ft. x 500 ft. acclimation pen for captive-bred rabbits. This area will be marked as off-limits for hunters, and is fenced with a locked gate, so there will be no physical disturbance associated with the hunt. It is not anticipated that the sound of gunshot would affect the NEC at all.

In summary, hunting activities may cause brief and minor disturbance to individual NEC outside of the acclimation pen. However, it is extremely unlikely to cause any adverse effect.

VI. **Determination of Effects** (continued):
**(B) Determination:** Determine the anticipated effects of the proposed project on species and critical habitats listed in item III. Check all applicable boxes and list the species associated with each determination.

| | **Response requested** |
|---|---|
| ▪*"No Effect"* This determination is appropriate when the proposed project will not directly or indirectly affect (neither negatively nor beneficially) a listed/proposed/candidate species or designated/proposed critical habitat of such species. List species applicable to this determination (or attach a list):<br>1. Piping plover (*Charadrius melodus*), Atlantic coast population<br>2. Northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*) | ___X__ Concurrence (optional) |
| ▪*"May Affect but Not Likely to Adversely Affect species/critical habitat"* This determination is appropriate when the proposed project is not likely to adversely impact a listed species or designated critical habitat of such species. List species applicable to this determination (or attach a list):<br>1. New England cottontail (*Sylvilagus transitionalis*) | ___X__ Concurrence |
| ▪*"May Affect and Likely to Adversely Affect species/critical habitat"* This determination is appropriate when the proposed project is likely to adversely impact a listed species or designated critical habitat of such species. List species applicable to this determination (or attach a list): | _____ Formal Consultation |
| ▪*" Not Likely to Jeopardize candidate or proposed species/critical habitat"* This determination is appropriate when the proposed project is not expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. List species applicable to this determination (or attach a list): | _____ Concurrence (Informal Conference optional) |
| ▪*"Likely to Jeopardize candidate or proposed species/critical habitat"* This determination is appropriate when the proposed project is reasonably expected to jeopardize the continued existence of a species proposed for listing or a candidate species, or adversely modify an area proposed for designation as critical habitat. List species applicable to this determination (or attach a list): | _____ Formal Conference |

Signature
[Supervisor at originating station]

12/14/11
Date

Reviewing Ecological Services Office Evaluation (check all that apply):

A. Concurrence X Nonconcurrence _____
Explanation for nonconcurrence:

B. Formal consultation required _____
List species or critical habitat unit:

C. Conference required _____
List species or critical habitat unit

Eric L. Davis (Acting) 12/6/2011
Signature [Reviewing ES Office Supervisor] Date

Name of Reviewing ES Office:

New England Field office.
70 Commercial St., Suite 30
Concord, NH 03301

# Ninigret National Wildlife Refuge (Hunt Map)