Department of the Interior
U.S. Fish and Wildlife Service
Environmental Assessment

Hellcat Trail Replacement Project at
Parker River National Wildlife Refuge
Newburyport, Massachusetts

August 2019
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This Environmental Assessment (EA) evaluates the effects associated with this proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality (CEQ) Code of Federal Regulations (CFR) (40 CFR 1500-1509) and Department of the Interior (DOI) (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (Service) (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment.

1. Proposed Action

The Service is proposing route alterations to the Hellcat Trail, located at Parker River National Wildlife Refuge (NWR, refuge). The 4,727-acre refuge is located in Essex County, Massachusetts, within the towns of Newbury, Newburyport, Rowley, and Ipswich. The refuge occupies the southern three-fourths of Plum Island, a 9-mile long barrier island. We propose to reroute the existing Dune Loop segment of the Hellcat Trail to make it American with Disabilities Act (ADA)-accessible. Additionally, a new section of trail will be constructed connecting the Marsh and Dune loop segments.

A proposed action is often iterative and may evolve during the NEPA process as the agency refines its proposal and gathers feedback from the public, tribes, and other agencies. Therefore, the final proposed action may be different from the original. The proposed action will be finalized at the conclusion of the public comment period for the EA.

2. Background

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

Parker River NWR was established in 1942 under the authority of the Migratory Bird Conservation Act for the following purpose:

“… for use as an inviolate sanctuary, or for any other management purpose, for migratory birds”.

In 1962, the Refuge Recreation Act (16 U.S.C. 460K-460K-4) expanded the purpose of Parker River NWR to include:

“...(1) incidental fish and wildlife-oriented recreation development, (2) the protection of natural resources, (3) the conservation of endangered species and threatened species...”

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

“... to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”
The Refuge System Administration Act mandates the Secretary of the Interior in administering the System to:

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

3. Purpose and Need for the Proposed Action

Walking trails provide visitor access within national wildlife refuges, allowing opportunities for high-quality compatible, wildlife-dependent public use. The Refuge System Administration Act of 1966 and the Refuge System Improvement Act of 1997 identify six priority wildlife-dependent recreation uses on refuges. The Hellcat Trail is regularly used by an estimated 150,000 annual visitors for four of these uses, including wildlife observation, photography, environmental education, and environmental interpretation.

Originally constructed by Youth Conservation Corps (YCC) crews in the 1970s, the Hellcat Trail currently consists of approximately 1-mile of elevated boardwalk. Two spurs exist, with the Marsh Loop located on the west side of the refuge road and the Dune Loop located on the east side. Due to the wooden plank construction, the trail is deteriorating at such a rate that safety concerns have been raised. This has led to the Hellcat Trail Replacement Project, during which the full boardwalk will be reconstructed to meet ADA accessibility standards. Replacement of approximately 80 percent of the trail has been approved via a Categorical Exclusion, as the work is being done in the exact footprint, or slight deviations, of the existing boardwalk.
remainder of the work, discussed below, differs substantially from the current trail, requiring the need for this EA.

The current Dune Loop observation platform is accessed by a series of stairs on either side of the platform. To meet ADA accessibility standards, the platform will be relocated further east, and the trail will be rerouted to circumnavigate several dune peaks. Additionally, a new, 660-foot trail will be constructed, allowing for connection of the Marsh Loop to the rerouted portion of the Dune Loop. This connector segment will cross the road approximately 400 feet north of the current crossing, and will include two paved parking spaces on the west side of the road for mobility impaired visitor access.

The proposed action will expand the priority public uses along the Hellcat Trail to all refuge visitors, including those with mobility impairments. This EA serves as the NEPA document, which analyzes the impacts on environmental, cultural, and historical resources of the proposed action on the refuge.

4. Alternatives Considered

The No Action Alternative would continue the current maintenance of the Hellcat Trail, repairing as needed. The trail would remain inaccessible to those with mobility impairments. Construction of the connector trail would not occur, meaning visitors would need to return down the Marsh Loop then take the east spur of the Marsh Loop, or walk the refuge road, to access the Dune Loop trail.

The Service considered replacing the Hellcat Trail boardwalk in its current configuration, but chose not to carry this forward as the current configuration does not provide universal accessibility due to multiple sets of stairs. The proposed action is described below in Section 5.

5. Proposed Action Alternative

Under this alternative, Parker River NWR will reroute the Dune Loop segment of the Hellcat Trail, bringing the trail from the road to the observation platform into compliance with ADA accessibility standards. This will involve construction of an elevated boardwalk trail and platform along a new footprint, which falls within the Parker River NWR Proposed Wilderness Area. Additionally, under this alternative, the refuge will create a connector trail that links the western spur of the Marsh Loop with the Dune Loop. Again, this will involve construction of an elevated boardwalk trail along a new footprint, along with the construction of a 35-foot-by-30-foot paved parking lot adjacent to the refuge road (Figure 1). The portion of the trail east of the refuge road will be within the Proposed Wilderness Area, while everything west of the road is outside the Wilderness boundary.
Construction will be undertaken by a contractor as part of the larger Hellcat Trail Replacement Project. The Dune Loop reroute will be Phase 5 while the connector trail will be Phase 4 (4A is east of the road, 4B is west). The contractor must follow the Statement of Work created by the refuge, outlining stipulations specific to this project. Aluminum helical piles will be installed at least 7 feet deep, spaced 8 feet apart, to support the boardwalk frame. The frame will be installed less than 30 inches above the ground with few exceptions.

This Proposed Action Alternative offers increased opportunities for wildlife observation, photography, environmental education, and interpretation while fulfilling the Service’s mandate under the Refuge System Improvement Act of 1997. It provides a recreational experience to the public while protecting natural habitats.

6. Mitigation Measures and Conditions

The purpose of the elevated boardwalk design is to reduce impacts to the natural environment. By restricting foot traffic to boardwalks instead of the ground, the refuge will eliminate the erosion and compaction that are typically associated with walking trails. Elevating the boardwalk allows the natural processes that shape the dynamic habitats of the refuge to continue without major impediments, and without degrading the boardwalk, eliminating the need for excessive maintenance.
Within the Statement of Work, the refuge has established multiple measures to reduce or avoid impacts during construction. This includes erosion control, spill prevention/cleanup, fire protection, and prevention of invasive species introduction. The contractor must have plans in place for each prior to beginning work. For visitor safety, the Hellcat Trail will be closed during construction.

To reduce impacts within the Proposed Wilderness Area, the refuge has completed a Minimum Tools Requirements Decision, which will permit the use of tracked equipment for installing the helical piles and transporting construction materials. Additionally, battery powered hand tools will be permitted, however, gasoline generators and wheeled carts will be prohibited.

7. Affected Environment

Parker River NWR consists of 4,727 acres in Newbury, Newburyport, Rowley, and Ipswich, Essex County, Massachusetts. The proposed action is located on approximately 0.25 acres, 0.15 acres of which will contain boardwalk, observation platform, and parking lot and the other 0.1-acre will be impacted only during construction. Refuge lands in this area include maritime forest and shrubland and coastal dune communities. Table 1 provides additional, brief descriptions of affected resources. For more information regarding the affected environment, please see the refuge’s Habitat Management Plan (HMP) (USFWS 2007a).

8. Environmental Impacts of the Action

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

Impact Types

Direct impacts are those which are caused by the action and occur at the same time and place.

Indirect impacts are those which are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect impacts include ecological (such as the impacts on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Indirect impacts may also include those resulting from actions with both beneficial and detrimental impacts; even if on balance, the agency believes that the impact will be beneficial.

Beneficial impacts are those resulting from management actions that maintain or enhance the quality and/or quantity of identified refuge resources or recreational opportunities.

Adverse impacts are those resulting from management actions that degrade the quality and/or quantity of identified refuge resources or recreational opportunities.
Duration of Impacts

Short-term impacts affect identified refuge resources or recreational opportunities; they occur during implementation of the management action but last no longer.

Medium-term impacts affect identified refuge resources or recreational opportunities that occur during implementation of the management action; they are expected to persist for some time into the future.

Long-term impacts affect identified refuge resources or recreation opportunities; they occur during implementation of the management action and are expected to persist far into the future.

Intensity of Impact

Negligible impacts result from management actions that cannot be reasonably expected to affect identified refuge resources or recreational opportunities at the identified scale.

Minor impacts result from a specified management action that can be reasonably expected to have detectable though limited impact on identified refuge resources or recreation opportunities at the identified scale.

Moderate impacts result from a specified management action that can be reasonably expected to have apparent and detectable impacts on identified refuge resources or recreation opportunities at the identified scale.

Major impacts result from a specified management action that can be reasonably expected to have readily apparent and substantial impacts on identified refuge resources and recreation opportunities at the identified scale.

Table 1 provides:

1. A brief description of the affected resources in the proposed action area;
2. Impacts of the proposed action on those resources, including direct and indirect impacts.

<table>
<thead>
<tr>
<th>NATURAL RESOURCES</th>
<th>AFFECTED ENVIRONMENT</th>
<th>ANTICIPATED DIRECT AND INDIRECT IMPACTS</th>
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</thead>
<tbody>
<tr>
<td>Wildlife and Aquatic Species</td>
<td>The unique habitats at Parker River NWR supports a high diversity of wildlife species including birds, mammals, reptiles, amphibians, and invertebrates, which are important contributors to the overall biodiversity on the refuge. More than 300 species of birds have been observed utilizing the refuge throughout the year. The refuge serves as important breeding and migration habitat for many wildlife species of Federal and State concern, including: piping plover, red knot, roseate tern, least tern, bald eagle, least bittern, northern harrier, peregrine</td>
<td>No Action: The Hellcat Trail is used year-round by visitors. Some minor, short-term negative impacts on wildlife due to disturbance associated with these public use activities occurs. Repair of the current Hellcat Trail will also cause minor, short-term negative impacts on wildlife due to disturbance. Proposed Action: Creating an ADA-accessible trail will allow more visitors to utilize the trail. An increased use of five percent is expected, but this increase will not be enough to cause additional impacts to wildlife over current</td>
</tr>
</tbody>
</table>
The Hellcat Trail is located primarily within the maritime forest/shrubland and coastal dune system. A spur enters the North Pool, one of the impounded wetlands. Specific information can be obtained in the Parker River NWR HMP (USFWS 2007).

<table>
<thead>
<tr>
<th>Proposed Action:</th>
<th>No Action:</th>
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<tbody>
<tr>
<td>The boardwalk design of the Hellcat Trail is meant to protect the sensitive habitats from impacts of foot traffic. It eliminates vegetation die-offs, soil compaction, and erosion, which are typical of heavily used walking paths. Although the boardwalk does cause some shading of the ground underneath it, limiting plant growth, overall, the trail itself has minimal impacts to the vegetation. Woody vegetation is regularly trimmed along the trail to prevent encroachment, but does not impact the growth of these plants. Refuge regulations prohibit the collection of vegetation, further reducing the impacts to vegetation from the public use of the Hellcat Trail.</td>
<td>The current use of the Hellcat Trail has few, if any, negative implications for species of special management concern. Most species do not utilize the dune or maritime forest/shrub habitat that the Hellcat Trail is located within. Some minor, short-term disturbance may occur from visitor use and boardwalk repairs.</td>
</tr>
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**Threatened and Endangered Species and Other Special Status Species**

**Federal:** The northern long-eared bat (*Myotis septentrionalis; MYSE*) is listed as threatened under the Endangered Species Act of 1973, as amended. MYSE have been documented within the Hellcat area of the refuge through the use of mist-netting surveys.

**Massachusetts:** The following wildlife species are confirmed to occur on the refuge and have been listed by Massachusetts as threatened or endangered: pied-billed grebe, American bittern, least bittern, bald eagle, northern harrier, peregrine falcon, king rail, short-eared owl, northern parula, little brown bat, tricolored bat, eastern spadefoot toad, and threespine stickleback. Multiple State-listed plant species occur on the refuge in small numbers, including: American bittersweet, sandplain gerardia, seabeach dock, and seabeach needlegrass.

**Vegetation (including vegetation of special management concern)**

Parker River NWR has a diverse array of habitats typical of a coastal barrier island, including sandy beach, dune and sandplain grasslands, interdunal swales, maritime forest and shrubland, and salt marsh. Human altered and managed habitats include grasslands and impounded wetlands.

The Hellcat Trail is located primarily within the maritime forest/shrubland and coastal dune system. A spur enters the North Pool, one of the impounded wetlands. Specific information can be obtained in the Parker River NWR HMP (USFWS 2007).

**No Action:**

The current use of the Hellcat Trail has few, if any, negative implications for species of special management concern. Most species do not utilize the dune or maritime forest/shrub habitat that the Hellcat Trail is located within. Some minor, short-term disturbance may occur from visitor use and boardwalk repairs.
The new section of the Dune Loop will be shorter in length than the section it is replacing, which will be completely removed and allowed to naturally revegetate.

Major impacts to vegetation will occur during construction of the new boardwalks. Vegetation will be cleared or trampled within a 14-foot zone (7 feet on each side from centerline of boardwalk). The refuge is requiring the contractor to limit disturbance to this 14-foot buffer. After construction, vegetation will be allowed to regrow.

Vegetation will also be removed in the location of the future handicap parking lot along the refuge road. This will initially be used as a construction staging area, and will then be paved, precluding all vegetative growth in the future.

To prevent the introduction of invasive species into the construction area, the refuge is requiring that the contractor clean the exterior of all vehicles and equipment prior to entering the refuge.

### Geology and Soils

Parker River NWR lies along the Atlantic Ocean and is comprised mostly of salt marsh, with the majority of the upland habitat occurring on a barrier island. The refuge has a variety of soil types, mostly from marine and glacial parent materials. Ipswich and Westbrook muck and mucky peat dominate the refuge, as these form the salt marsh and impoundments. The dunes and maritime forest/shrublands are comprised of Udipsamment soils. The other upland areas vary in soil type, although are predominantly sandy loams.

**No Action:**

The Hellcat Trail boardwalk prevents soil compaction and erosion by keeping foot traffic off the ground surface. Repairing the current trail will cause minor compaction and soil disturbance, as workers will need to walk, stand, and move equipment over the ground.

**Proposed Action:**

Construction of the new Dune Loop segment and connector trail will cause compaction, soil disturbance, and erosion within the 14-foot work zone surrounding the boardwalk footprint. In the Statement of Work, the refuge is requiring the contractor to provide erosion control to limit the impacts of their work.

### Air Quality

There are a total of 15 air quality monitoring stations across Massachusetts, including one on Plum Island. The State typically meets all air quality standards for pollutants except ozone. Based on data from 2015 to 2018, the Plum Island station was not in violation of the 8-hour ozone standard (MADEP 2018).

**No Action:**

Negligible, short-term adverse impacts occur on the refuge related to the Hellcat Trail due to emissions from visitors’ cars as they travel to the refuge and from employees/contractors repairing the boardwalk.

**Proposed Action:**

By creating a universally accessible trail, visitation may increase, leading to a slight, but still negligible, increase in emissions. During construction, the contractor will be using vehicles and equipment that will release emissions. These too are expected to be negligible and short-term.
Water Resources
Parker River NWR is highly influenced by natural water resources. The Atlantic Ocean lies along the refuge’s eastern boundary, while the Plum Island River cuts through the middle of the refuge’s northern salt marshes, connecting the Merrimack River to Plum Island Sound. The Parker River enters Plum Island Sound through portions of the refuge salt marsh, and whose watershed the bulk of the refuge resides within. Refuge property is also located within the Merrimack and Ipswich River watersheds.

There are 1,237 acres of tidal river, bay, and estuary habitats at Parker River NWR, in addition to the 2,600 acres of salt marsh containing numerous natural and man-made pools, creeks, and ditches. The refuge contains three man-made impoundments, located adjacent to Plum Island Sound, and managed through inflows and outflows from the waters of the sound.

No Action:
The current boardwalk does enter North Pool, but regular maintenance and use of the structure does not impact the water resources.

Proposed Action:
No influence expected, as the section involved in this alternative is not located within the vicinity, or connected to, any water resources.

Wetlands
A variety of wetland communities on the refuge supports an array of habitats benefiting widely diverse species of animals and plants. Over half of the refuge (2,660 acres) is composed of salt marsh while 262 acres of brackish wetlands are found within the three impoundments. Interdunal swales are exemplary communities, providing habitat for rare species.

No Action:
Trimming of the vegetation along the section of boardwalk in North Pool does occur periodically, but does not cause any long-term negative impacts. Most of this vegetation is invasive Phragmites australis, signifying that the wetland in this area has already been degraded.

Proposed Action:
No influence expected, as the section involved in this alternative is not located within the vicinity of any wetlands.

Wilderness
Portions of Parker River NWR were proposed for Wilderness Area designation in 1974. All of Hellcat Trail located east of the refuge road is located within the Proposed Wilderness Area, including the Dune Loop and the eastern portion of the proposed connector trail.

No Action:
The Hellcat Trail boardwalk allows visitors to experience the Proposed Wilderness Area without causing detrimental impacts to the sensitive dune habitat. Maintaining the boardwalk will cause no further impacts to the Proposed Wilderness Area.

Proposed Action:
The refuge has conducted a Minimum Tool Requirements Decision, which will permit the use of tracked equipment for installation of the helical piles and transporting construction materials into and out of the Proposed Wilderness Area. Additionally, battery powered hand tools will be permitted, although gasoline generators and wheeled carts will not.
VISITOR USE AND EXPERIENCE

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<tr>
<td>Parker River NWR is open to all six of the System’s priority public uses (hunting, fishing, wildlife observation, wildlife photography, environmental education, and environmental interpretation). About 300,000 people visit the refuge each year, making it one of the most highly visited NWRs in the Northeast Region. The refuge also hosts a robust visitor services program, providing numerous public programs and tours each month. As one of the longest walking trails on the refuge, the Hellcat Trail receives heavy visitation throughout the year. Use is highest in May, during spring songbird migration. In addition to wildlife observation, the Hellcat Trail is also used extensively by photographers, and many school groups utilize it for educational purposes.</td>
<td>No Action: Repairs to the boardwalk will create a safer experience for visitors, eliminating the potential for visitors to encounter broken boards. The trail will continue to remain inaccessible to visitors with mobility impairments. Portions of the trail will be closed while repairs are being made, excluding visitors from utilizing these areas. Proposed Action: Rebuilding the Hellcat Trail to meet ADA accessibility standards will allow additional visitors to utilize the trail. Steps are located in numerous locations throughout the trail, including a large staircase leading to the observation platform on the Dune Loop, precluding the use of the trail by those with mobility impairments. The new design will eliminate steps, have gentle slopes that are easy for all visitors to manage, be wider to allow for the use of mobility aids, and provide handrails in key areas to assist walkers. The addition of the two handicap parking spots in the lot along the refuge road will provide mobility impaired visitors easy access to the Dune Loop and northern portion of the Marsh Loop through use of the new connector trail. These alterations are expected to lead to a five percent increase in trail use, as most visitors to the refuge will now be able to access the full trail. Portions of the trail will be closed while construction is ongoing, excluding visitors from utilizing these areas. Construction activity along the refuge road may also negatively impact visitor travel in the Hellcat area.</td>
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CULTURAL RESOURCES

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<tr>
<td>Parker River NWR has a long history of use, beginning with Native Americans. Seventeen precontact Native Americans sites have been identified within the refuge, consisting of shell middens, camps, larger habitation sites, lithic workshops, and human burials. Shell midden deposits have been identified in virtually every ecozone on the refuge. Twenty-nine post-contact Euro-American sites have been documented, including seasonal camps, farmsteads, shipwrecks,</td>
<td>Environmental Consequences Common to All Alternatives: The refuge contracted with PaleoWest Archaeology to conduct an archaeological survey on the Hellcat Trail project. The survey yielded minimal cultural material and, therefore, the Service concluded there would be no impacts to historic properties for construction on the trail. Massachusetts State Historic Preservation Office (SHPO) has concurred with the Service.</td>
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life-saving stations, aids to navigation, and a grain mill. Many camps were present when the refuge was established and have been progressively removed, with the last removed in 2016. The only historic period structure remaining on the refuge is the Light Keeper’s Dwelling on the north end of Plum Island.

### REFUGE MANAGEMENT AND OPERATIONS

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<tr>
<td><strong>Infrastructure</strong></td>
<td>No Action: No new infrastructure will be required under this alternative. The refuge will continue to maintain the existing boardwalk, making repairs on an as-needed basis. Proposed Action: While a five percent increase in use of the Hellcat Trail is expected to occur with this alternative, this amount is small enough that the impacts to infrastructure will be negligible. The use of aluminum helical piles and Trex decking will significantly decrease maintenance requirements of the boardwalk structure.</td>
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<tr>
<td><strong>Administration</strong></td>
<td>No Action: Maintenance of the Hellcat Trail boardwalk will continue to be conducted by the refuge maintenance staff, volunteers, and occasionally, independent contractors. Proposed Action: Funding is expected to be obligated to the refuge through fiscal year 2019 Headquarters Transportation Funding. The work will be conducted by an independent contractor, who will be selected through a bidding process. Annual operation of the trail will cost $1,000, mainly for regular maintenance. The level of maintenance necessary will be substantially reduced due to the use of long-lasting materials.</td>
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### SOCIOECONOMICS

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<tr>
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Local and Regional Economies

Parker River NWR is located in the towns of Newbury, Rowley, and Ipswich and the City of Newburyport, Massachusetts in Essex County. It is approximately 40 miles north of Boston, Massachusetts. Essex County was the third most populated county in the state in 2010 with 743,159 residents (USDOC 2012). The population of Newbury was 6,666, Rowley was 5,856, Ipswich was 13,175 and Newburyport was 17,416. All towns and the City of Newburyport have increased residential development since 2010, leading to an increase in population in all except Newbury, which declined by 0.76 percent.

The predominant land uses near the refuge are residential and commercial development. Tourism plays a major role in the local economy, with local Chamber of Commerce’s citing Parker River NWR as one of the area’s major attractions. Total expenditures from refuge visitors were $7.4 million ($2.3 million from residents and $5.1 million from non-residents) in 2006 (USFWS 2007b). The refuge averages 300,000 visitors per year.

No Action:
There will be no new impacts to local economies through maintaining the current Hellcat Trail.

Proposed Action:
Redesigning the Hellcat Trail to meet ADA accessibility standards will increase the use of the trail by an estimated five percent, attracting additional visitors to the refuge. This may boost expenditures in the local area, as some visitors will travel from outside the local communities.

While construction is ongoing, there will likely be slight positive impacts to the local economy as the contractors will spend money at local businesses.

Environmental Justice

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<tr>
<td>Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all Federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. There are no known minority or low-income communities within the affected environment.</td>
<td>Environmental Consequences Common to All Alternatives: \nNo influence expected.</td>
</tr>
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Indian Trust Resources

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<tr>
<td>DOI Environmental Compliance Memorandum 97-2 requires that all agency environmental assessments must address explicitly whether there are or not any Indian Trust Resources that may be impacted by the</td>
<td>Environmental Consequences Common to All Alternatives: \nNo influence expected.</td>
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</tbody>
</table>
There are no known Indian Trust Resources on Parker River NWR or the nearby area.

9. Cumulative Impact Analysis

According to the CEQ NEPA implementing regulations in 40 CFR 1508.7, “cumulative impact” is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

<table>
<thead>
<tr>
<th>Past, Present, and Reasonably Foreseeable Activity in Area of Analysis</th>
<th>Descriptions of Anticipated Cumulative Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Resources</strong>&lt;br&gt;These include air quality, water quality, soil, and cultural resources.</td>
<td><strong>Impacts Common to All Alternatives:</strong>&lt;br&gt;Some short-term, local deterioration in air quality would be expected from emissions of motor vehicles used by refuge visitors, staff, and contractors. There will be no cumulative negative effects on soil, water quality, or cultural resources.</td>
</tr>
<tr>
<td><strong>Biological Resources</strong>&lt;br&gt;These include wildlife, vegetation, and wetlands.</td>
<td><strong>Impacts Common to All Alternatives:</strong>&lt;br&gt;The boardwalk eliminates potential habitat for some wildlife and vegetation species, but as the area impacted is small, and the refuge provides thousands of additional, undisturbed acres, the impacts from the Hellcat Trail are minor. No wetlands will be impacted.</td>
</tr>
<tr>
<td><strong>Socioeconomic Resources</strong></td>
<td><strong>No Action:</strong>&lt;br&gt;No expected long term cumulative change in the local economy. <strong>Proposed Action:</strong>&lt;br&gt;There is expected to be a minor, positive impact as additional visitors travel to the refuge to take advantage of the universal accessibility now provided along the Hellcat Trail.</td>
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</table>

10. Summary of Findings

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

<table>
<thead>
<tr>
<th>Affected Environment</th>
<th>No Action Alternative:</th>
<th>Proposed Action Alternative:</th>
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<tbody>
<tr>
<td>Wildlife and Aquatic Species</td>
<td>Minor, short-term adverse impacts (disturbance).</td>
<td>Minor, short-term (disturbance) and long-term (loss of habitat) adverse impacts.</td>
</tr>
</tbody>
</table>
Threatened and Endangered Species

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<tr>
<th>Threatened and Endangered Species</th>
<th>Negligible, short-term adverse impacts to northern long-eared bats (disturbance).</th>
<th>Negligible, short-term adverse impacts (disturbance) and minor, long-term impacts (tree removal) to northern long-eared bats.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetation</td>
<td>Minor, long-term impacts (pruning).</td>
<td>Minor, short-term (removal, trampling) and long-term (shading, pruning) impacts.</td>
</tr>
<tr>
<td>Water Resources</td>
<td>No impact.</td>
<td>No impact.</td>
</tr>
<tr>
<td>Wetlands</td>
<td>Negligible, short-term adverse impacts (trampling).</td>
<td>No impact.</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>No impact.</td>
<td>No impact.</td>
</tr>
<tr>
<td>Visitor Use and Experience</td>
<td>Negligible, short-term negative impacts (temporary inconvenience) and major, long-term positive impacts (access).</td>
<td>Minor, short-term adverse impacts (temporary inconvenience) and major, long-term positive impacts (increased accessibility).</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>Negligible, long-term positive impacts (economic growth).</td>
<td>Minor, long-term positive impacts (economic growth).</td>
</tr>
<tr>
<td>Refuge Management and Operations</td>
<td>Moderate, long-term negative impacts (constant maintenance).</td>
<td>Moderate, long-term positive impact (reduced trail maintenance).</td>
</tr>
<tr>
<td>Environmental Justice</td>
<td>No impact.</td>
<td>No impact.</td>
</tr>
<tr>
<td>Indian Trust Resources</td>
<td>No impact.</td>
<td>No impact.</td>
</tr>
</tbody>
</table>

**No Action Alternative**

There would be no change to the accessibility of the Hellcat Trail under this alternative. Numerous stairs would continue to impede access to those with mobility impairments. The wooden construction of the existing boardwalk would continue to provide a burden on the maintenance staff as it continues to deteriorate, requiring regular repairs.

**Proposed Action Alternative**

This alternative is the Service’s proposed action because it expands accessibility of the Hellcat Trail and minimally impacts physical and biological resources, while meeting the Service’s mandates under the Refuge System Administration Act. Rerouting the Dune Loop to the observation platform to meet ADA accessibility standards, and creating a connector trail between the Dune and Marsh Loops, will allow more visitors to partake in wildlife observation, photography, environmental education, and interpretation along the refuge’s longest trail. The Service believes that these alterations to the Hellcat Trail will not have a significant impact to wildlife, other uses, or refuge administration.
Conclusion
The Service proposes to change the layout of the Hellcat Trail at Parker River NWR as analyzed above under the Proposed Action Alternative, which will not have any significant impacts on the human environment.

11. Public Consultation, Coordination, and Review

Public Outreach
Public notifications of the availability of this EA will be made through local venues, the refuge website, and social media notices. Comments received from the public will be considered and modifications may be incorporated into the final plan and decision documents.

List of Preparers
Katlyn Hojnacki – Contractor
Bill Peterson – Refuge Manager
Sharon Ware – Deputy Refuge Manager

12. References


13. Determination

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

☐ The Service action will not result in a significant impact on the quality of the human environment. See the attached “Finding of No Significant Impact”.


☐ The Service action **may significantly affect** the quality of the human environment and the Service will prepare an Environmental Impact Statement.

Preparer Signature: __________________________________________ Date:________

Name/Title/Organization: __________________________________________________
________________________________________________________________________

Certifying Officer Signature: ____________________________ Date:________

Name/Title: ____________________________________________________________
COMPATIBILITY DETERMINATION

**USE:** Interpretation, Environmental Education, Wildlife Observation, and Wildlife Photography

**REFUGE NAME:** Parker River National Wildlife Refuge

**DATE ESTABLISHED:** 1942

**ESTABLISHING AND ACQUISITION AUTHORITY:**

Migratory Bird Conservation Act (16 U.S.C. 715d) PL 91-504, 16 USC § 1132(c)

**REFUGE PURPOSE(S):**

“...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds” (16 U.S.C. section 715d).

**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.

**DESCRIPTION OF USE:**

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

The uses are interpretation, environmental education, wildlife observation, and wildlife photography. All four of these uses are priority uses of the National Wildlife Refuge System (Refuge System) under the Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the Refuge System Improvement Act of 1997 (Public Law 105-57). Visitors access the refuge and conduct these uses by walking, hiking, snowshoeing, cross-country skiing, and driving motor vehicles (street registered vehicles) on the refuge’s road (Wildlife Drive). These uses are proposed on the refuge to increase the public’s knowledge, understanding, and appreciation of the refuge’s natural resources and wildlife. By participating in these uses, we hope that visitors will support the refuge and Refuge System and be inspired to conserve natural resources.

(b) **Where will these uses be conducted?**

Wildlife observation and photography occurs along the refuge road, on boardwalks and trails, in parking areas, and in other areas open to public use. Refuge facilities that facilitate these uses include a visitor center (on the mainland), visitor contact station (at parking lot 1), two observation towers, Great Salt Panne observation area, and Bill Forward bird blind. A boat launch (opposite parking lot 1) provides visitors with kayaks and canoes with access to the saltwater creeks that wind through the refuge’s saltmarsh habitat – a unique way to view and photograph wildlife.
The following is a list of boardwalks and trails on the refuge:

- Parking lot 1 boardwalk (with access to beach; 140 yards/.08 mile)
- Parking lot 2 boardwalk (with access to beach; 320 yards/.18 mile)
- Parking lot 3 boardwalk (with access to beach; 380 yards/.21 mile)
- Parking lot 5 boardwalk (terminates with overview of, but no access to beach; 320 yards/.18 mile)
- Parking lot 6 boardwalk (with access to beach; 230 yards/.13 mile)
- Parking lot 7 boardwalk (with access to beach; 80 yards/.05 mile)
- Hellcat interpretive boardwalk complex (1.5 miles)
- Pines Trail (stone dust surfaced; wheelchair accessible; .25-mile loop)
- Stage Island Trail (unimproved, natural surface; 1.75 miles (out and back))

Interpretation and environmental educational programs, workshops, and special events also occur in designated locations on refuge lands. Occasionally, these programs may occur in areas generally closed to the public. Participants in the refuge’s popular Behind-the-Scenes tours are provided the opportunity to travel the length of the North Pool Dike (in a refuge vehicle) – an area normally closed to the public.

(c) When will the uses be conducted?
These uses occur on the refuge year-round, during the refuge’s open hours (sunrise to sunset). Occasionally, after hours programs and events, led by staff and/or volunteers, take place on the refuge and in the visitor center.

(d) How will the uses be conducted?
Most visitors will participate in these uses within the Plum Island portion of the refuge. The Plum Island portion has a single entrance/exit point, located on the refuge’s northern boundary. Visitors pass through an entrance station, where they are assessed a daily fee of $5 per vehicle or $2 per person if on foot or bike. The entrance fee is waived for visitors who possess a refuge-specific annual pass, any of the Department of the Interior (DOI) passes, and/or a Federal Duck Stamp. Refuge visitors park their vehicles in one of several designated parking areas that are distributed along the length of Wildlife Drive. Visitors are allowed to pause in their vehicles along the shoulder of Wildlife Drive for the purpose of viewing wildlife and/or taking photographs. Nelson Island, accessible from a parking lot on the mainland, provides additional opportunities to engage in these uses.

Visitors engaged in wildlife observation and photography generally walk along trails or in other areas open to the public or bicycle or drive along the refuge road. Visitors engaged in these uses will also use other public use facilities, such as the visitor center, visitor contact station, boardwalks, two observation decks, and the Bill Forward bird blind. In the winter, some visitors may also cross-country ski or snowshoe along the refuge road (when it remains unplowed and closed to motor vehicles), trails, and other areas open to the public.

Wildlife observation and photography are typically self-guided and visitors engaged in these uses use the shoulder of the refuge road, trails, viewing areas, informational material, photo blinds, and other areas open to the public. Refuge staff and/or volunteers occasionally conduct guided bird walks.

The refuge’s Photographic Society offers regular public programs on both photography and
image editing. The Society’s extremely popular Facebook page provides a forum for photographers to share their nature and wildlife images. The refuge’s annual photo contest further promotes and supports photography on the refuge.

- Interpretation and environmental education programs include presentations by staff, volunteers, teachers, and other youth leaders, and special events and displays both on and off the refuge. These activities may include:
  - Formal environmental education programs (e.g., staff, volunteer and/or partner-led field trips).
  - More informal environmental education programs (e.g., tide pooling).
  - Interpretive talks and guided walks.
  - Self-guided interpretation (e.g., interpretive panels along trails, interpretive displays, and exhibits in visitor centers, and interpretive brochures for trails).
  - Annual special events (e.g., Eagle Festival, Conservation Film Festival, Earth Day, Endangered Species Day, Let’s Go Outside!, National Wildlife Refuge Week).
  - Interpretive information is also provided on signs and kiosks, in printed information (e.g., brochures and fact sheets), exhibits, and through audiovisual presentations, as well as social media outlets.

In addition to strategies to support these uses listed in the refuge’s (draft) comprehensive conservation plan (CCP), refuge staff, volunteers, and partners will perform the following:

- Onsite evaluations to resolve public use issues.
- Monitoring and evaluation of impacts of the use on refuge resources.
- Maintenance of boundaries and signs.
- Meet with interested members of the public.
- Recruitment of volunteers.
- Preparation and presentation of interpretive and environmental education programs.
- Revision of interpretive and environmental materials.
- The creation and installation of additional kiosks, interpretive panels, and smartphone-enabled, self-guided tours.

(c) Why are these uses being proposed?
The Refuge System Improvement Act defines wildlife observation, photography, environmental
education, and interpretation as priority public uses. Priority public uses, if found compatible on a refuge, are to receive our enhanced consideration over other general public uses. Authorizing these uses will provide opportunities for the public to enjoy wildlife and plants on the refuge in accordance with law, and it will produce better-informed public advocates for U.S. Fish and Wildlife Service (Service) programs.

These uses provide opportunities for visitors to observe and learn about wildlife, wildlands, and cultural resources at their own pace and observe wildlife in their natural habitats. These four priority uses provide visitors with opportunities to enjoy refuge resources and gain a better understanding and appreciation of fish and wildlife, wildlands ecology, the relationships of plant and animal populations in an ecosystem, and wildlife management. These activities will enhance the public’s understanding of natural resource management programs and ecological concepts, enable the public to better understand and connect with the problems facing our wildlife and wildlands resources, help visitors to better understand how they affect wildlife and other natural resources, learn about the Service’s role in conservation and restoration, and forge relationships that will aim to encourage the public to take action for the sake of the environment.

Photographers will have opportunities to photograph wildlife in its natural habitat. These opportunities will increase the publicity and advocacy of Service programs. Photography provides wholesome, safe, outdoor recreation in a scenic setting, and entices those who come strictly for recreational enjoyment to participate in the educational facets of our public use program and become advocates for the refuge and the Service.

Visitors need a way to access these priority uses. By allowing visitors to walk, hike, cross-country ski, snowshoe, bicycle, boat, and drive automobiles in designated areas of the refuge, we are providing access to these important priority public uses with minimal impacts to sensitive wildlife and habitat.

Continuation of these programs helps the Service meet the Refuge System’s goal, to provide an understanding and appreciation of fish and wildlife ecology and human’s role in their environment.

**AVAILABILITY OF RESOURCES:**

The following list estimates the required costs for the refuge to administer and manage its current programs for wildlife observation and photography, environmental education, and interpretation. Costs associated with administering this use includes assessing the need for road and trail maintenance and repair, maintaining kiosks, gates, and traffic counters, recording collected data, maintaining signs/posting roads and trails, informing the public about the range of refuge uses, conducting visitor use surveys, analyzing visitor use patterns, monitoring the effects of public uses on refuge resources and visitors, and providing information to the public about the use. Such costs do not include the costs of new infrastructure construction, interpretive panels, signs, and other costs as described in the (draft) CCP. They also do not cover unanticipated costs such as participation in search and rescue operations. The refuge’s Federal wildlife officer is the primary contact for any emergency operations on the refuge; however, local resources are available to assist and provide resources if necessary. Because such incidents are uncommon and unpredictable, these costs are not included in the resources estimate below. The use of refuge staff to develop and monitor public uses and engage visitors is required for
administering all refuge public uses. Therefore, these responsibilities, and related equipment, are accounted for in budget and staffing plans.

<table>
<thead>
<tr>
<th>Program</th>
<th>Responsibility</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program Oversight (wildlife refuge manager)</td>
<td>$8,000</td>
<td></td>
</tr>
<tr>
<td>Interpretive Program Development, Environmental Education</td>
<td>$25,000</td>
<td></td>
</tr>
<tr>
<td>Coordination, Development of Interpretive Exhibits and Brochures (visitor services manager)</td>
<td>$1,200</td>
<td></td>
</tr>
<tr>
<td>Special Use Permits/Monitoring Resource Impacts (wildlife biologist)</td>
<td>$1,200</td>
<td></td>
</tr>
<tr>
<td>Provide Public Information (gatehouse staff)</td>
<td>$25,000</td>
<td></td>
</tr>
<tr>
<td>Visitor Safety (Federal wildlife officer)</td>
<td>$5,500</td>
<td></td>
</tr>
<tr>
<td>Trail and Parking Lot Maintenance (maintenance staff)</td>
<td>$25,000</td>
<td></td>
</tr>
<tr>
<td><strong>Total Annual Cost of Program</strong></td>
<td>$89,700</td>
<td></td>
</tr>
</tbody>
</table>

The financial and staff resources necessary to provide and administer these uses at their current levels are now available. We expect the resources to continue in the future, subject to availability of appropriated funds.

**ANTICIPATED IMPACTS OF THE USE:**

Following are descriptions of potential adverse effects on natural resources of interpretation, environmental education, wildlife observation, and wildlife photography, accessed by walking, hiking, cross-country skiing, snowshoeing, and boating in designated refuge areas and bicycling and driving on public roads.

**Effects on Hydrology and Water Quality:** Visitor use has the potential to negatively impact water resources within the refuge (e.g., salt marsh and adjacent creeks, impoundments). Exposed soils on hiking trails may increase sediments in near-by waterways, and petroleum products may be introduced by runoff from parking lots and roads. However, overall we do not anticipate any major impacts to hydrology and water quality because these uses are limited to designated areas only, current and projected levels of use are relatively low, and we will build, maintain, and monitor trails and roads in such ways as to minimize impacts.

Refuge visitors are encouraged to use refuge trails and roads. The majority of visitors hike along designated boardwalks, trails, and roads. Buffers will be required on trails that are adjacent to waterways to decrease bank erosion, and filter contaminants before they enter waterbodies. Boardwalks will provide a path for users to cross over the wetlands or streams and not through them, thereby minimizing long-term adverse effects to hydrology and water quality. In addition, refuge staff will routinely monitor roads, trails, and boardwalks for damage and remediate problem areas as needed.

There is the potential for bicycles and cars traveling on the refuge to impact refuge wetlands through increased soil erosion, sedimentation, and run-off or from contaminants from cars (e.g., oil and antifreeze). To minimize these impacts, cars and bicycles are allowed only on designated roads. At current and anticipated levels of use, we do not expect any greater than negligible impacts from cars and bicycles on refuge hydrology and wetlands. Refuge parking lots are not be located directly adjacent to streams, rivers, or other wetlands. Additionally, where feasible, parking lots will be constructed of gravel, which is more porous than
impervious surfaces such as asphalt, and therefore would result in lower levels of runoff and sedimentation.

Trails, kiosks, and other possible public use facilities may cause short-term adverse impacts from soil runoff and sedimentation into the refuge’s water resources. A more detailed discussion of the impacts of these construction projects will be addressed in a subsequent environmental assessment if/when appropriate.

**Effects on Vegetation:** To facilitate interpretation, environmental education, wildlife observation, and wildlife photography, we will allow hiking, cross-country skiing, and snowshoeing access on designated trails and other areas open to the public, and bicycle and automobile access on designated roads. Short-term effects consist of the deterioration of plant material, whereas long-term effects of trampling include direct and indirect effects on vegetation and soils like diminishing soil porosity, aeration, and nutrient availability through soil compaction (Kuss 1986, Roovers et al. 2004). Compaction of soils thus limits the ability of plants, particularly rare and sensitive species, to revegetate affected areas (Hammitt and Cole 1998). Kuss (1986) found that plant species adapted to wet or moist habitats are the most sensitive and increased moisture content reduces the ability of the soil to support recreational traffic. Where adverse impacts to vegetation are observed, the refuge will take necessary measures, such as remediation and trail closures, to restore plant communities.

It is anticipated that allowing foot traffic on the refuge will cause some vegetation loss, increased tree root exposure, and trampling effects; however, we will minimize the potential for impacts to vegetation by allowing these uses in designated areas open to the public. The majority of visitors stay on trails and roads. Off-trail use could have impacts to adjacent vegetation; however, we will encourage users to remain on existing trails (where they exist) and roads. Also, off-trail use is generally dispersed and occurs at low levels. It is also anticipated that under current and projected use the incidence of these problems will be minor. Some rare plants have been documented in habitat adjacent to trails; however, designated routes do not have any known occurrences of rare plant species on their surface or soils subject to compaction that will be impacted by this use. Because cross-country skiing and snowshoeing only occur during the winter, when plants are dormant and the ground is covered with snow, we anticipate negligible impacts to vegetation from cross-country skiing and snowshoeing. We will not allow bicycles or automobiles off refuge roads. Refuge staff will monitor all trails, identify problem areas, and conduct appropriate restoration and protection efforts.

**Effects on Soils:** Because such a high percentage of the “trails” at the refuge take the form of elevated boardwalks, negative impacts on soils (e.g., from compaction, erosion, and sedimentation) are greatly minimized. We may close areas to the public either seasonally or permanently to minimize impacts to sensitive wildlife and habitats. Off-trail use occurs infrequently and is dispersed. In areas where new construction will be necessary (e.g., observation platforms, boardwalk segments, parking lots, kiosks, roads, and trails) localized soil compaction and loss of productive soil will occur. These impacts will constitute unavoidable adverse impacts from refuge infrastructure improvements but will be short-term and temporary as restoration and revegetation of construction sites will be prioritized. Additionally, trail construction projects may cause temporary disturbance to improve trails but will lead to more stable and sustainable trails over the long term. For example, boardwalks will be constructed over sensitive wetlands to mitigate long-term impacts to wetland communities, but short-term impacts may be created during the construction phase. As warranted, impacts of new trail construction not currently under consideration would be
evaluated in a supplemental environmental assessment(s), if appropriate.

**Effects on Wildlife:** Short- and long-term adverse impacts will be expected for wildlife populations in relation to increasing trail miles and visitor use. However, we do not anticipate any major, long-term impacts on wildlife from allowing these uses because current and projected levels of use are relatively low and these uses are only allowed in designated areas open to the public.

Disturbances to wildlife will vary by wildlife species involved and the type, level, frequency, duration, and the time of year activities occur. Beale and Monaghan (2004) found that adverse effects to wildlife increase as number of users increase. The study found that an animal’s response to one visitor walking down a trail is entirely different than its response to a group of users walking down a trail. The refuge recognizes that large group sizes may amplify negative effects to wildlife. Therefore, groups larger than 10 are required to notify the refuge prior to visiting to determine if a special use permit (SUP) would be needed. This will enable the refuge to understand which trails are preferred by large groups, and to monitor any potential excessive wildlife disturbance created by large groups. Having the ability to monitor these kinds of disturbances will also enable the refuge to mitigate impacts associated with large groups. Examples of mitigation may include directing large groups to less sensitive habitats during breeding seasons or assigning refuge staff to lead or meet with the group while on refuge lands.

Disturbance can cause shifts in habitat use, abandonment of habitat, and increased energy demands on affected wildlife (Knight and Cole 1991). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. In this study, common species (e.g., American Robins) were found near trails and rare species (e.g., Blackburnian warblers) were found farther from trails. In some cases there is a clear link between the extent of disturbance and either the survival or reproductive success of individuals (e.g., Schulz and Stock 1993), but in many cases disturbance act in a more subtle way, by reducing access to resources such as food supplies or nesting sites (Gill et al. 1996). Bird flight in response to disturbance can lower reproductive success by exposing individuals and nests to predators. For recreation activities that occur simultaneously (hiking, biking, and horseback riding) there will likely be compounding negative impacts to wildlife (Knight and Cole 1991).

Evidence suggests that species most likely to be adversely affected are those where available habitat is limited thus constraining them to stay in disturbed areas and suffer the costs of reduced survival or reproductive success (Gill et al. 2001). Species that are sensitive to human disturbance with specialized habitat requirements include bald eagles, peregrine falcons, and American black ducks (DeGraff et al. 2001, Longcore et al. 2000).

Limiting or closing recreational use within the vicinity of nest sites during the breeding season will mitigate impacts to these species. Trail development has striven to and will continue to avoid sensitive habitats.

Wildlife disturbance may be compounded by seasonal needs. For example, causing mammals to flee during winter months would consume stored fat reserves that are necessary to get through the winter. Hammitt and Cole (1998) found white-tailed deer females with young are more likely to flee from disturbance than those without young. Some species, like warblers, would be negatively affected by disturbance associated with bird watching particularly during...
the breeding season.

For songbirds, Gutzwiller et al. (1994) found that low levels of human intrusion altered the singing behavior of some species. Disturbance may also affect the reproductive fitness of males by hampering territory defense, mate selection, and other reproductive functions of vocalizations (Arrese 1987). Disturbance, which leads to reduced singing activity, makes males rely more heavily on physical deterrents, which are time- and energy-consuming in defending territories (Ewald and Carpenter 1978).

Refuge visitors who choose to kayak or canoe the salt marsh creeks may cause localized, minor, short-term impacts by disturbing the bottom substrate in shallow water. In addition, discarded items such as plastic containers present a risk for waterfowl and other birds. We expect these impacts to be negligible due to very low number of boaters on the refuge.

We will take all necessary measures to minimize all of these impacts, particularly where group educational activities are involved. We will evaluate the sites and programs periodically to assess whether they are meeting the objectives, and to prevent site degradation. If evidence of unacceptable adverse impacts appears, we will rotate the activities to secondary sites, or curtail or discontinue them. If necessary, we will close areas seasonally around active bird nesting sites and avoid recreational use of areas where federally listed species occur to minimize or eliminate human disturbance. We will post and enforce refuge regulations, and establish, post, and enforce closed areas.

PUBLIC REVIEW AND COMMENT:

This compatibility determination (CD) supports the current environmental assessment for the Hellcat Trail Replacement Project at Parker River National Wildlife Refuge. We will inform the public of the availability of this CD through local venues, the refuge website and social media notices. Comments received will be considered and modifications may be incorporated into the final decision documents.

DETERMINATION (CHECK ONE BELOW):

X Use is compatible, with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

The refuge has developed a list of criteria for determining whether any given route (e.g., trail, road, etc.) would be appropriate for interpretation, environmental education, wildlife observation, and wildlife photography.

These criteria apply to current and future trails and are designed to help minimize negative impacts to soils, vegetation, and wildlife, and to provide high-quality experiences to visitors. Criteria are as follows:

Checklist for Existing Routes to Be Eligible for Compatibility Consideration

(1) The route provides an opportunity to view a variety of habitats and wildlife.
(2) The route is safe for the proposed types and amount of use.

(3) The route requires minimal annual maintenance (e.g., use water bars and stepping stones, etc., to reduce soil and hydrology impact) to ensure safe access and to prevent further habitat degradation.

(4) The route has a low potential for fragmenting habitat or disturbing wildlife populations.

(5) Based on existing soils information, less than 50 percent of the route’s length occupies soil types rated as high or very high for compaction and/or erosiveness. The route is not rated as severely limited for hiking trails based on appropriate county soil surveys.

(6) Any route crossing of sensitive soils occupies the shortest possible distance. Organic soil crossings are minimized or eliminated.

(7) Continued use of the existing route is not likely to cause further wetland alteration or degradation. There is low risk that hydrology, soil stability, sensitive plant communities, riparian zones, and wildlife habitats would be adversely affected.

(8) The route predominately occupies previously modified substrate (graveled, compacted, or filled), such as former logging roads and rail grades.

(9) The route is not incised more than 1-foot deep over 10 percent of its total length.

Additional stipulations that will apply to ensure compatibility include:

(1) Refuge regulations will be posted at trailheads and entrance kiosks and enforced. Closed areas will be established as needed, posted, and enforced. Signs necessary for visitor information, safety, and traffic control will be kept up to date.

(2) The known presence of a threatened or endangered species will trigger discussions with the Service’s New England Field Office prior to allowing any new use of an area.

(3) We will choose locations for public uses to minimize impacts to wildlife and habitat. We will periodically evaluate sites and programs to assess whether objectives are being met and to prevent site degradation. If evidence of unacceptable adverse impacts appears, the location(s) of activities will be rotated with secondary sites or the use will be reduced or discontinued.

(4) Bicycles and automobiles are only allowed on designated refuge roads. Bicycles and automobiles are not allowed on refuge trails or off-road.

(5) Only non-motorized boats (e.g., canoes and kayaks) may be launched from the refuge boat ramp, with the exception of waterfowl hunters, who may launch motorized boats during the waterfowl hunting season.

(6) Visitors engaged in walking, hiking, snowshoeing, and cross-country skiing are encouraged to stay on designated refuge trails and roads, where these exist.
These uses are restricted to refuge open hours: one-half hour before sunrise until one-half hour after sunset.

The refuge conducts an outreach program to promote public awareness and compliance with public use regulations on the refuge (via social media platforms, web site, signage and handouts).

Group size is encouraged to be no more than 10 persons to promote public safety, accommodate other users, and reduce wildlife disturbance. Groups larger than 10 people must contact the refuge office prior to visiting the refuge so that staff can determine if the group will require a SUP. Groups traveling only on roads shared with vehicles are not required to contact the refuge office or obtain a SUP.

All routes designated for public access are annually inspected for maintenance needs. Prompt action is taken to correct any conditions that risk public safety. Roads and trails are maintained at a level that reasonably accounts for safe travel. The paved portion of the refuge road (e.g., Wildlife Drive) is plowed during the winter.

Guidelines to ensure the safety of all participants will be issued in writing to any SUP holder for the activities and will be reviewed before the activity begins.

Routes designated for public access are monitored periodically to determine if they continue to meet the compatibility criteria (listed above) established by the refuge. Should monitoring and evaluation of the use(s) indicate that the compatibility criteria are or will be exceeded, appropriate action will be taken to ensure continued compatibility, including modifying or discontinuing the use.

Routine law enforcement patrols are conducted throughout the year. The patrols promote education and compliance with refuge regulations, monitor public use patterns and public safety, and document visitor interaction.

Potential conflicts with other public uses such as hunting will be minimized by using trailhead signs and other media to inform the visitors about current public use activities as well as which activities are authorized in specific locations throughout the refuge.

**JUSTIFICATION:**

Interpretation, environmental education, wildlife observation, and wildlife photography are all priority public uses and are to receive enhanced consideration on national wildlife refuges, according to the Refuge System Improvement Act of 1997. Providing increased wildlife-dependent recreational opportunities promotes visitor appreciation and support for refuge programs, as well as habitat conservation efforts in the Connecticut River watershed.

Wildlife observation, photography, environmental education, and interpretation activities generally support refuge purposes and impacts can largely be minimized (Goff et al. 1988). Interpretation and environmental education can also help to develop a resource protection ethic within society. They allow us to educate refuge visitors about endangered and threatened species management, wildlife management, ecological principles, and ecological...
communities. Environmental education and interpretation also instill an ‘ownership’ or ‘stewardship’ ethic in visitors. These uses strengthen Service visibility in the local community.

The majority of visitors to the refuge come to view and/or photograph wildlife and habitats. There will be some visitor impacts from this activity, such as trampling vegetation (Kuss and Hall 1991) and disturbance to wildlife (Burger 1981, Klein, 1989); however, stipulations to ensure compatibility will make these impacts minimal. For example, we encourage visitors to stay on trails and roads and, if necessary, will close areas to these uses to protect sensitive habitats (e.g., wetlands) and wildlife (e.g., breeding birds).

By encouraging visitors to stay in designated areas open to the public, impacts to vegetation, soils, hydrology, wetland communities, wildlife, and ecological integrity of the refuge will be minimized. Because the majority of visitors use designated trails and roads on a small percentage of the refuge, disturbance will be limited and manageable. Through proper trail maintenance these impacts will be further reduced. Hydrologic and soil impacts were generally inherited with refuge lands and are being remediated through routine maintenance operations. These uses will not affect the refuge’s ability to restore impacted lands nor will they materially increase sedimentation, erosion, or hydrologic impacts on refuge lands. Also, current and projected future levels of use are low, so we expect impacts to refuge soils, wildlife, and vegetation to be minor. We also have stipulations in place to further reduce impacts to refuge resources, such as limiting group sizes, closing sensitive areas, if necessary, to public use, and guidelines for designing and future trails.

These uses will not have an effect on threatened or endangered species, because these uses will not be allowed in areas where known federally listed species exist. Wherever listed plants or wildlife occur, we will close these areas to visitor use. The refuge will work with the Service’s Ecological Services Office to ensure that no adverse effects will occur. We will ensure that no trails or human impacts will be allowed in the areas where these species either exist or have been sighted.

For these reasons, allowing these uses will not detract from the refuge’s purposes, the Fish and Wildlife Act (1956), or the mission of the Refuge System for conserving, managing, restoring, and protecting wildlife resources. Based on this information, we have determined that environmental education and interpretation, wildlife observation, and photography will not materially interfere with or detract from the mission of the Refuge System or the purposes for which the refuge was established.

**SIGNATURE:**

Refuge Manager: ____________________________ ( Signature ) ____________________________ ( Date )

**CONCURRENCE:**

Regional Chief: ____________________________ ( Signature ) ____________________________ ( Date )

**MANDATORY 15-YEAR RE-EVALUATION DATE:** ____________________________
LITERATURE CITED:


INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Sharon Ware
Acting Refuge Manager
Parker River NWR

Telephone Number: (978) 572-5613
Date: July 17, 2019

I. Region: Northeast, Region 5

II. Service Activity (Program): NWRS, Parker River NWR

III. Pertinent Species and Habitat:

A. List species and/or their critical habitat within the action area:
   Northern long-eared bat (Myotis septentrionalis)

B. Proposed species and/or proposed critical habitat within the action area:
   None

C. Candidate species within the action area:
   None

IV. Geographic area of station name and action:
Route alteration to the Hellcat Trail at Parker River NWR.

V. Location:
   A. Ecoregion Number and Name:
      Eastern Broadleaf Forest (Oceanic) Province; 221A (R.G. Bailey, Ecoregions of the United States, 1995)
   B. County and State:
      Essex, Massachusetts
   C. Section, township, and range (or latitude and longitude):
      42.744857, -70.795972
   D. Distance (miles) and direction to nearest town:
      The Hellcat Trail is located within the town of Rowley section of the refuge, approximately 4.5 miles northeast of the town center.
   E. Species/habitat occurrence:
Northern long-eared bats have been documented on the refuge through mist-netting in 2010. Additionally, acoustic work conducted in Newburyport in 2016 detected their presence. These bats are present, or are likely present, within the forested habitat on the refuge.

VI. Description of Proposed Action
Parker River NWR will reroute the Dune Loop segment of the Hellcat Trail, bringing the trail from the road to the observation platform into compliance with Americans with Disabilities Act (ADA) accessibility standards. This will involve construction of an elevated boardwalk trail and platform along a new footprint. Additionally, under this alternative, the refuge will create a connector trail that links the western spur of the Marsh Loop with the Dune Loop. Again, this will involve construction of an elevated boardwalk trail along a new footprint, along with the construction of a 35ft by 30ft paved parking lot adjacent to the refuge road (Figure 1).

Construction will be undertaken by a contractor as part of the larger Hellcat Trail Replacement Project. The Dune Loop reroute will be Phase 5 while the connector trail will be Phase 4 (4A is east of the road, 4B is west). The contractor must follow the Statement of Work created by the refuge, outlining stipulations specific to this project. Aluminum helical piles will be installed at least 7ft deep, spaced 8ft apart, to support the boardwalk frame. The frame, constructed using pressure-treated lumber, will be installed less than 30in above the ground. Trex polymer lumber (60in wide) will be used for the boardwalk decking. Handrails, composed of pressure-treated lumber supports and Trex top caps, will be installed where necessary for safety purposes.

VII. Determination of Effects
A. Explanation of effects of the action on species and critical habitats in items III. A, B, and C:
Northern long-eared bats are present in the area in very small numbers. Construction of the Hellcat Trail will involve tree cutting. Any trees with a diameter at breast height (DBH) of three inches or larger are considered potential roost trees for the species, and removal may reduce the habitat available. Tree removal from April through September would cause greater impacts, as the bats are present and utilizing the habitat during this time. Northern long-eared bats are not present on the refuge from October through March.

B. Explanation of actions to be implemented to reduce adverse effects:
Tree cutting for the Hellcat Project is exempt under the 4(d) rule (81 FR 1900). To limit impacts to northern long-eared bats, the refuge will ask the contractor to
conduct most tree cutting from October to March, when bats are not present on the refuge.

VIII. Effect determination and response requested:

A. Listed species/designated critical habitat:

<table>
<thead>
<tr>
<th>Determination</th>
<th>Response Requested</th>
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<tbody>
<tr>
<td>No effect/no adverse modification</td>
<td>__ Concurrence</td>
</tr>
<tr>
<td>(species:________________________)</td>
<td></td>
</tr>
<tr>
<td>May affect, but is not likely to adversely affect species/adversely modify critical habitat</td>
<td>X Concurrence</td>
</tr>
<tr>
<td>(species: northern long-eared bat)</td>
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</tr>
<tr>
<td>May affect, and is likely to adversely affect species/adversely modify critical habitat</td>
<td>Formal Consultation</td>
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<td>(species:________________________)</td>
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</tbody>
</table>

B. Proposed species/proposed critical habitat:

<table>
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<tbody>
<tr>
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<td>__ Concurrence</td>
</tr>
<tr>
<td>(species:________________________)</td>
<td></td>
</tr>
<tr>
<td>Is likely to jeopardize proposed species/Adversely modify proposed critical habitat</td>
<td>Conference</td>
</tr>
<tr>
<td>(species:________________________)</td>
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</tbody>
</table>

C. Candidate species:

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<th>Response Requested</th>
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<td>__ Concurrence</td>
</tr>
<tr>
<td>(species:________________________)</td>
<td></td>
</tr>
<tr>
<td>Is likely to jeopardize</td>
<td>Conference</td>
</tr>
<tr>
<td>(species: :________________________)</td>
<td></td>
</tr>
</tbody>
</table>
IX. **Reviewing Ecological Services Office Evaluation:**

A. Concurrence______________ Non-concurrence ________________

B. Formal consultation required______________

C. Conference required______________

D. Informal conference required______________

E. Remarks (attach additional pages as needed)______________

_________________________________________  
Supervisor, England Field Office  Date
Figure 1. Approved design for the Hellcat Trail Replacement Project.