

## Appendix D



USFWS

*Red knot*

## Findings of Appropriateness and Compatibility Determinations

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This appendix reflects our evaluation of what uses to allow or not allow under the Service-preferred alternative B of the draft comprehensive conservation plan (CCP) and environmental impact statement (EIS).

The first table below (table D.1) lists the uses for which the refuge has existing, completed findings of appropriateness (FOAs) and compatibility determinations (CDs). These existing FOAs and CDs were approved prior to the development of this draft CCP/EIS. For each of these uses, we list its current status (e.g., compatible or not compatible) and compare that to our proposal under alternative B. For example, some uses we would continue to allow under alternative B, while other existing uses may be modified or not allowed.

The second table (table D.2) lists other uses that the refuge does not have an existing, completed FOA and/or CD for and indicates our proposal for those uses under alternative B.

Following this table, we provide the full FOAs and CDs for all of these uses under alternative B.

**Table D.1. Uses with existing, completed compatibility determinations for Monomoy Refuge\***

Use	Previously Determined Compatible	Previously Determined Not Compatible	Changes proposed under Alternative B (Service-preferred)
Beachcombing	X		Completed FOA to accompany an updated CD. Use is found appropriate and compatible.
Birding, Natural and Cultural History Tours of Monomoy Islands	X		New FOA and CD titled " Commercial Tours, Ferry Service, Guided Trips, and Outfitting." Includes concessionaire operations and/or others under special use permit. Uses found appropriate and compatible with stipulations.
Commercial Ferry Service	X		Combined use with new FOA and CD titled "Commercial Tours, Ferry Service, Guided Trips, and Outfitting." Uses found appropriated and compatible with stipulations.
Hiking\Backpacking	X		Combined backpacking with FOA for camping and found it not appropriate. A new FOA and CD is titled "Hiking or Walking" and both are appropriate and compatible.
Horseshoe Crab Harvesting		X	New FOA found use not appropriate.
Jogging/Walking	X		Combined jogging and walking with hiking in new FOA and CD titled "Hiking, Walking, and Jogging." Found walking and hiking appropriate and compatible. Found jogging appropriate and compatible on Morris Island only.
Mosquito Control	X		Added "monitoring" to name of CD and completed FOA. Found appropriate and compatible with stipulations.
Pet Walking	X		New FOA finds use not appropriate.
Photography	X		Prepared separate commercial photography FOA and CD and combined recreational photography with wildlife observation in separate CD. Uses found appropriate and compatible with stipulations.
Picnicking	X		New FOA finds use "organized picnicking" not appropriate.
Recreational Fishing	X		New CD titled "Fin Fishing" covers surf fishing, fishing in freshwater ponds, and all other fishing outside of the refuge's open water. Found compatible.
Shellfishing (hand harvest of softshell clams)	X		New CD finds use compatible on refuge, but only for hand harvest of subterranean clams. Use found compatible with stipulations.
Shorebird research	X		Completed new FOA and CD titled "Research Conducted by Non-Service Personnel" which includes broader research program and not a single project. New CD finds use appropriate and compatible with stipulations.
Snowshoeing	X		Not addressed due to lack of weather conditions conducive to snowshoeing.

Use	Previously Determined Compatible	Previously Determined Not Compatible	Changes proposed under Alternative B (Service-preferred)
Stage Island Parking	X		FOA for parking and dinghy storage at Stage Island found uses to be not appropriate.
Swimming/Beach Use	X		Completed FOA to accompany updated CD. Use is found appropriate and compatible.
Whimbrel Research on North Monomoy	X		Completed new FOA and CD titled "Research Conducted by Non-Service Personnel" which includes broader research program and not a single project. New CD finds use appropriate and compatible with stipulations.
Wildlife Observation	X		Expanded CD to include recreational photography. New CD finds uses compatible.

**\*Notes:**

*"Existing completed" refers to compatibility determinations that are current as of December 2013.*

*CD = compatibility determination; FOA= finding of appropriateness*

**Table D.2. Uses without existing compatibility determinations for Monomoy Refuge that are addressed in this CCP (proposed actions under alternative B (Service-preferred alternative))**

Use	Proposed Not Appropriate	Proposed Compatible	Comments
Beach Use (sports, kite-flying, grilling, and shade tents)	X		
Bicycling	X		
Camping	X		
Fisheries Harvest Using Bottom Disturbing Gear and Techniques	X		
Mussel Harvesting	X		
Fires	X		
Fireworks	X		
Jet Skiing	X		
Kiteboarding	X		
Over Sand Vehicles	X		
Motorized and Nonmotorized Boat Launching		X	Also completed FOA.
Virtual Geocaching and Letterboxing		X	Also completed FOA.
Outdoor Ceremonies and Events		X	Also completed FOA.
Waterfowl Hunting		X	
Commercial Wildlife and Landscape Photography		X	New FOA and CD applies to commercial use, distinguishing it from recreational photography.
Environmental Education and Interpretation		X	

**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Beach Use (Sports, Kite Flying, Grilling, and Shade Tents)

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Beach Use (Sports, - Kite Flying, Grilling and Shade Tents)

**NARRATIVE:**

The Service policy on Appropriate Refuge Uses (603 FW 1) states, “General public uses that are not wildlife-dependent recreational uses (as defined by the Improvement Act) and do not contribute to the fulfillment of refuge purposes or goals or objectives as described in current refuge management plans are the lowest priorities for refuge managers to consider. These uses are likely to divert refuge management resources from priority general public uses or away from our responsibilities to protect and manage fish, wildlife, and plants, and their habitats. Therefore, both law and policy have a general presumption against allowing such uses within the Refuge System.”

Beach sports include, but are not limited to, volleyball, football, soccer, frisbee, baseball, surfing, and skim boarding. Kite-related activities include kite flying, kite surfing, and kite boarding. These activities are determined to be inappropriate because they can disturb wildlife. These uses do not contribute to quality wildlife-dependent recreational uses nor do they support the purpose for which the refuge was established.

Grilling can result in the intentional or unintentional deposition of food waste on the refuge which could be eaten by refuge wildlife. This could result in an increase of gulls or mammals who can also act as mammalian predators on bird eggs and unfledged chicks.

These uses are more appropriate in a park setting and would, if allowed, detract from the purpose of the refuge which is to protect migratory birds and provide opportunities for recreational wildlife-dependent public use. When conducted in designated wilderness, all these activities, including the use of shade tents in the wilderness area, detract from the wilderness character of the refuge. Activities which are generally done in groups, such as beach sports and grilling, can also negatively impact the quality of solitude which is to be preserved in wilderness.

There are insufficient refuge facilities to accommodate these uses on Morris Island. Allowing these uses to occur on Morris Island would increase parking pressure on the small parking lot at refuge headquarters. This could result in less parking for visitors who are coming to the refuge to engage in wildlife-dependent public uses such as fishing and birding.

**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Bicycling

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?		✓
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		✓
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Bicycling

**NARRATIVE:**

Monomoy NWR includes the Morris Island tract, which contains refuge administration and visitor facilities, a parking lot, and the ¾ mile Morris Island Interpretive Trail. Visitors are allowed to access the refuge by bicycle, but then must park the bicycle and proceed on foot. The Morris Island Trail traverses a variety of coastal habitats, including a sandy beach and salt marshes, and is not conducive to bicycling. The rest of the refuge is made up of North Monomoy Island, South Monomoy (a former island that connected to the mainland in 2006), smaller islands such as Minimoy, and extensive tidal flats. The majority of these lands are nationally designated wilderness. Bicycling is not allowed within wilderness areas because mechanized transport, including anything with wheels, is prohibited in order to maintain wilderness character.

Bicycling on Morris Island has the potential to directly impact the quality experience of individuals engaging in priority wildlife-dependent activities such as bird watching, fishing, and photography. Bicycling also has the ability to disrupt priority migratory birds and other wildlife on the beach. Access by bicycle is not necessary to provide the visitor an opportunity to see wildlife throughout the refuge. Pedestrian access is sufficient to provide the public with opportunities to observe wildlife and enjoy the natural conditions on the refuge. Given the difficult cycling conditions, the potential impacts to priority wildlife-dependent recreation, the potential impacts to priority wildlife, and the prohibition of mechanized transportation within the nationally designated wilderness area, bicycling is not an appropriate recreational use for Monomoy National Wildlife Refuge.



**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Boat Moorings

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Boat Moorings

**NARRATIVE:**

The town of Chatham administers and enforces regulations for moorings (anchors, chains, hawsers, bridles, etc.) and vessel or other object anchoring within all town of Chatham waters through the Chatham Harbormaster, using a fee-based permit system. All vessels berthed within Chatham for two consecutive weeks or longer are required to obtain a mooring permit from the Chatham Harbormaster, with all permits expiring on December 31 each calendar year. Currently, there are no mooring permits issued by Chatham within the Monomoy National Wildlife Refuge boundary as defined by the Declaration of Taking for the refuge. The refuge maintains several moorings within the refuge boundary, which are necessary for effective and efficient refuge operations.

Mooring permits must be renewed annually, are not transferrable, and if not renewed by February 28 are forfeited. Chatham's mooring fee-schedule is based upon a taxpayer/residency status, private, or commercial mooring use, and vessel length. Several popular mooring fields within Chatham, including Stage Harbor consistently experience many more applicants than there are moorings available (mooring saturation), and consequently Chatham maintains a waiting list. Mooring permit applicants are required to pay an annual "waiting list" renewal fee per boat to retain their "place" on the waiting list because of the "shortage" of mooring space relative to the demand for moorings. For example, the waiting list time for a new "unprotected" mooring for a vessel up to 27 feet in Stage Harbor was 10-14 years as of December 31, 2013.

The town mooring regulations specify the type of mooring inspection requirements and mooring tackle required for different sized vessels and "exposure" environments, with the heaviest mooring tackle required for the most exposed areas. These regulations prohibit new concrete block moorings within "protected areas," requiring that concrete block systems be replaced with alternative (more environmentally "friendly") mooring systems over time. The high demand for additional mooring space, especially for larger commercial fishing vessels that have difficulty maneuvering safely within a congested Stage Harbor, could prompt future requests for new moorings near or even within the refuge boundary west of North Monomoy. The "high exposure" of this location would require the heaviest of mooring tackle for the larger vessels most likely to want to use the area, resulting in rather large radius "sweep" areas around the mooring blocks.

The University of Massachusetts, Urban Harbors Institute recently (2013) completed a comprehensive assessment of conservation moorings in coastal Massachusetts. The two most common types of conventional mooring are mushroom or pyramid anchors and gravity anchors. Mushroom type moorings are designed to anchor into the sediment while gravity anchors rely on the weight of the mooring to keep the boat in place. A heavy bottom chain runs from the mooring to the mooring ball. "The heavy chain moves along the seafloor as the boat moves, disrupting the living organisms in its path (Hastings, et al., 1995; Betcher et al, undated; MER Assessment Corporation, 2008; Terramar Environmental Services, Inc., 2011). Bare space around a traditional mooring is referred to as a "mooring scar." The degree of scarring and the extent of the scar are dependent upon factors such as the length and weight of chain and the nature of vessel movement (e.g., currents, tidal range, prevailing wind, storm exposure). While the mooring scar from the chain sweep is the primary impact on eelgrass in terms of areal extent of impact, the method of anchoring a mooring can also negatively affect eelgrass beds. During storms, anchors such as mushroom moorings, can become dislodged from the sediment, and may drag through eelgrass beds, destroying plants as they move. Additionally, the presence of large deadweight anchors, such as concrete and granite blocks, can lead to significant scouring around a mooring."

Eelgrass meadows have a complex structure that provides habitat for a diverse community of microorganisms, algae, and marine mammals. Eelgrass plants contribute to the overall productivity of the marine ecosystem by using the energy of sunlight to produce organic matter in the form of roots, rhizomes, and plant leaves.

Eelgrass meadows support a diverse assemblage of marine invertebrates, including species of marine worms, crustaceans (e.g., barnacles, crabs, shrimp, copepods, amphipods) hydroids, bryozoans, and mollusks (e.g., mussels, snails, and clams). Eelgrass meadows are widely recognized as important fish habitat. Most fishes using eelgrass extensively are young-of-year, juveniles, or adults of species that are small in size. Eelgrass is an important food source for waterfowl such as Atlantic brant, black duck, canvasback duck, and Canada goose. Scouring from moorings could also impact other benthic communities, outside of eelgrass beds.

The National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57) identifies six uses of wildlife refuges as priority public uses; environmental education, interpretation, hunting, fishing, wildlife observation and wildlife photography. These recreational 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.

The Service has statutory authority under the National Wildlife Refuge System Administration Act of 1966 to regulate activities that occur on water bodies within refuge units. In addition, the nearshore open waters and subtidal bottoms within the Declaration of Taking boundary are owned by the United States as the property owner.

Boat mooring placement is not a priority public use nor will the use facilitate any of the priority public uses. Boat moorings can degrade eelgrass beds through substrate disturbance (Neckles 2005) and disturb the bottom and disrupt benthic communities even in areas where seagrass beds are not located. Additionally, the refuge does not have adequate resources and staffing to administer moorings. Staffing time spent on administering a moorings (e.g., reviewing, approving, and issuing special use permits, visiting proposed mooring sites to ensure they are not in sensitive areas, and monitoring impacts of moorings on refuge resources) would reduce time available for managing refuge habitats and providing opportunities for priority public uses. In light of the above policies and impacts, these activities do not support the purposes of the Monomoy National Wildlife refuge (migratory bird and wilderness preservation) or the mission of the National Wildlife Refuge System. Therefore, placement of boat moorings is determined to be not appropriate.

#### **LITERATURE CITED:**

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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Camping

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?		✓
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		✓
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Camping

**NARRATIVE:**

The Service policy on Appropriate Refuge Uses (603 FW 1) states, “General public uses that are not wildlife-dependent recreational uses (as defined by the Improvement Act) and do not contribute to the fulfillment of refuge purposes or goals or objectives as described in current refuge management plans are the lowest priorities for refuge managers to consider. These uses are likely to divert refuge management resources from priority general public uses or away from our responsibilities to protect and manage fish, wildlife, and plants, and their habitats. Therefore, both law and policy have a general presumption against allowing such uses within the Refuge System.”

Camping, including backpacking, is not consistent with Service policy on secondary uses. Resources needed to manage an overnight, primitive camping program that adequately provides for public and employee sanitation and safety, without disturbing or harming focal wildlife species, would divert existing and future resources from accomplishing priority refuge tasks. Primitive “backcountry” camping on Monomoy presents unacceptable levels of risk from the potential escape of campfires to wildfires and the possible disturbance to nesting shorebirds, seabirds, wading birds, and breeding northeastern beach tiger beetles. The use does not support the refuge’s purpose in carrying out the national migratory bird program. This use is also not consistent with any approved refuge management plan. There would be some added benefit for the visitor to observe or photograph wildlife, or participate in nature study or recreational fishing. The remoteness of interior portions of South Monomoy within the Monomoy Wilderness does offer a rare, outstanding opportunity for solitude, especially at night through backcountry camping. However, these priority uses and wilderness experience can be adequately provided for through daylight-hour day use and without overnight camping. Allowing camping on the refuge, given the lack of staff and financial resources to manage the use, the conflict it would cause with other users, as well as the impact on refuge plant and wildlife resources, makes this an inappropriate use for Monomoy National Wildlife Refuge.

**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Fires

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?		✓
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		✓
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Fires

**NARRATIVE:**

The Service policy on Appropriate Refuge Uses (603 FW 1) states, “General public uses that are not wildlife-dependent recreational uses (as defined by the Improvement Act) and do not contribute to the fulfillment of refuge purposes or goals or objectives as described in current refuge management plans are the lowest priorities for refuge managers to consider. These uses are likely to divert refuge management resources from priority general public uses or away from our responsibilities to protect and manage fish, wildlife, and plants, and their habitats. Therefore, both law and policy have a general presumption against allowing such uses within the Refuge System.”

Fires are not necessary for visitors to engage in any of the approved public uses on the refuge, including the priority public uses. Fires can disturb nesting and staging shorebirds, seabirds, and wading birds that use the refuge. Fires also have the potential to spread and endanger plants, wildlife, and public safety. Fires are associated with non-wildlife dependent forms of recreation, some of which have been found to be not appropriate. Furthermore, the refuge does not have the resources needed to manage this activity, and any increases in staff would be targeted to enhance population and habitat management, priority public uses, and resource and visitor safety. The use does not support the refuge’s establishing purpose to provide for migratory birds.



**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Fireworks

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?		✓
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?		✓
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes \_\_\_\_\_ No ✓.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate** ✓ **Appropriate** \_\_\_\_\_

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Fireworks

**NARRATIVE:**

The Service policy on Appropriate Refuge Uses (603 FW 1) states, “General public uses that are not wildlife dependent recreational uses (as defined by the Improvement Act) and do not contribute to the fulfillment of refuge purposes or goals or objectives as described in current refuge management plans are the lowest priorities for refuge managers to consider. These uses are likely to divert refuge management resources from priority general public uses or away from our responsibilities to protect and manage fish, wildlife, and plants, and their habitats. Therefore, both law and policy have a general presumption against allowing such uses within the Refuge System.”

Fireworks are not an appropriate use on the refuge. Fireworks pose significant impacts to wildlife and habitat, especially during the summer and early fall when shorebirds, seabirds, and wading birds nest and stage on the refuge. In addition, fireworks are a public safety risk that could start wildfires or cause injury to refuge visitors. This use does not support the refuge’s establishing purpose to provide habitat for migratory birds.

**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Fisheries Harvest Using Bottom Disturbing Gear and Techniques on Submerged Lands

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?		✓
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Fisheries Harvest Using Bottom Disturbing Gear and Techniques on Submerged Lands

### **NARRATIVE:**

The National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57) identifies six uses of wildlife refuges as priority public uses; environmental education, interpretation, hunting, fishing, wildlife observation, and wildlife photography. These recreational 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.

Fisheries harvest using bottom disturbing gear and techniques occurs in nearshore in subtidal open waters and in intertidal waters, in accordance with Federal, State (and local) regulations, within the refuge's Declaration of Taking boundary, primarily along North Monomoy Island and the western shore of South Monomoy Island. Bottom otter trawling for fin fish and scallop dredging are the most common bottom disturbing fishing conducted within the Monomoy Declaration of Taking area during the 1995 to 2001 period (Stevenson et al 2004). A fixed weir is also placed some years in open waters within the refuge boundary. Fish weirs are temporary fish traps that are jettied into the bottom substrate for stabilization and to secure the fish weir. Hand-operated, long-handled "bull rakes" are also used to harvest soft shell clams and quahogs from shallow, unvegetated subtidal areas, but are believed to have very limited impacts on those bottom or submerged vegetation.

Stevenson et al (2004) provided a useful summary of available scientific information on physical and biological impacts for different gear and bottom types on the Essential Fish Habitat (EFH) around Monomoy refuge. The greatest EFH vulnerability concern was for mobile bottom-tending gear, including various bottom otter trawls, New Bedford-style scallop dredges, and hydraulic clam dredges. Impacts of hydraulic or mechanical shellfish dredges (such as rakes, plungers, or shovels) on intertidal bottom structure and benthic invertebrates are typically greater and longer lasting than those from hand harvest (Ferns et al. 2000, Piersma et al. 2001, MacKenzie and Pikanowski 2004, Verhulst et al. 2004, Munari et al. 2006, Kraan et al. 2007, and Peterson and Estes in press). Depending on the spatial scale involved, changes in bottom topography can have profound effects on benthic infauna (Ray 2005). Dernie et al. (2003) showed that a difference of only 10 centimeters in the amount of material removed during mechanized shellfish harvest from a sand flat in Wales, UK resulted in a substantial decrease in benthic fauna recovery rate. Plots where 20 cm of sediment were removed required 208 days for infaunal community reestablishment, whereas plots with only 10 cm removed recovered in 64 days.

Fisheries harvest using bottom disturbing gear and techniques can degrade eelgrass beds through substrate disturbance (Neckles 2005). Eelgrass meadows have a complex structure that provide habitat for a diverse community of microorganisms, algae, and marine mammals (CT DEP and DA 2007). Eelgrass plants contribute to the overall productivity of the marine ecosystem by using the energy of sunlight to produce organic matter in the form of roots, rhizomes, and plant leaves (CT DEP and DA 2007). Eelgrass meadows support a diverse assemblage of marine invertebrates, including species of marine worms, crustaceans (e.g., barnacles, crabs, shrimp, copepods, amphipods) hydroids, bryozoans, and mollusks (e.g., mussels, snails, and clams). Eelgrass meadows are widely recognized as important fish habitat. Most fishes using eelgrass extensively are young-of-year, juveniles, or adults of species that are small in size. Eelgrass is an important food source for waterfowl such as Atlantic brant, black duck, canvasback duck, and Canada goose.

The Service has statutory authority under the National Wildlife Refuge System Administration Act of 1966 to regulate activities that occur on water bodies within refuge units. The intertidal waters, nearshore open

waters, and subtidal bottoms within the Declaration of Taking boundary are owned by the United States and are not subject to the Massachusetts Colonial Ordinance allowing fishing, fowling and navigation.

Several refuge policies also apply to this use:

16USC668dd, 50 CFR 27.97, “Private Operations. Soliciting business or conducting a commercial enterprise on any national wildlife refuge is prohibited except as may be authorized by special permit.”

16USC668dd, 50 CFR, Subpart A, 29.1, Allowing Economic Uses on National Wildlife Refuges

“We may only authorize public or private economic use of the natural resources of any national wildlife refuge, in accordance with 16 U.S.C. 715s, where we determine that the use contributes to the achievement of the national wildlife refuge purposes or the National Wildlife Refuge System mission...”

In light of the above policies, these activities do not support the purposes of the Monomoy National Wildlife refuge (migratory bird and wilderness preservation) or the mission of the National Wildlife Refuge System. Therefore, fisheries harvest using bottom disturbing gear and techniques is therefore determined to be Not Appropriate.

### **LITERATURE CITED:**

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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Horseshoe Crab Harvesting

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?		✓
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		✓
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Horseshoe Crab Harvesting

### **NARRATIVE:**

The Atlantic States Marine Fisheries Commission has implemented a fishery management plan to regulate the harvest of horseshoe crabs with the goal of ensuring sustainable population levels. The science, quotas, and harvest regulations of horseshoe crab management are not the primary issues that the U.S. Fish and Wildlife Service (USFWS) must address. Policy and law requires that “uses” taking place on national wildlife refuge lands and waters must be determined to be both “appropriate” and “compatible” with the primary purposes for which the refuge was established and the National Wildlife Refuge System (NWRS).

Horseshoe crab harvesting is not identified as a priority public use of the NWRS under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

The horseshoe crabs’ reproductive strategy makes them vulnerable to overharvest. Horseshoe crabs are slow to mature and are easily collected in large quantities during spawning periods. Horseshoe crabs collected from the subtidal areas of Monomoy NWR during spawning are likely adults, and because horseshoe crabs do not mature for nearly a decade, a heavily exploited population will recover slowly (Loveland et al. 1996 [AR, 5A, 411-418]).

Declines in horseshoe crab populations have been observed in Massachusetts. A recent study in Bourne, Massachusetts, found that the population had declined by more than 80 percent and spawning activity decreased by 95 percent from 1984 to 1999. In addition, the spawning period had shortened from 56 to 11 days. Researchers also found a substantial decrease in the number of spawning individuals at Stage Harbor, Chatham, Massachusetts, over a 5-year period, suggesting that the decline of horseshoe crab populations on Cape Cod may be widespread (Widener and Barlow 1999 [AR, 5A, 578-579]).

Studies have documented the importance of horseshoe crab eggs to the survival of many shorebird species in Delaware. Many of the shorebird species that use Monomoy during migration have been documented feeding on horseshoe crab eggs in other areas, such as Delaware Bay. These species are present on Monomoy during horseshoe crab spawning periods, or soon enough after spawning that horseshoe crab eggs would be an available food item (Veit and Petersen 1993, USFWS 2001, S. Koch personal communication, S.F. Marino personal communication). Further, the United States Shorebird Conservation Plan considers many of these shorebird species to be species of high concern (Brown et al. 2001).

In 2002, after extensive analysis and research demonstrating that refuge shorebirds eat horseshoe crab eggs, the harvesting of horseshoe crabs from the waters of Monomoy refuge was found to be not compatible. Based on policy preventing the take or disturbance of wildlife on a refuge, continued documented declines in horseshoe crab populations, new information about the length of time that red knots are staging at Monomoy refuge during migration, and the importance of horseshoe crabs in general to priority migratory bird species, horseshoe crab harvesting is not appropriate on Monomoy NWR.

Monomoy NWR was established under the Migratory Bird Conservation Act “...for use as an inviolate sanctuary or for any other management purpose, for migratory birds” (16 U.S.C. § 715d). The harvesting of horseshoe crabs would directly contribute to a decline of spawning horseshoe crabs on the refuge. A decline



in horseshoe crabs, and in particular horseshoe crab eggs, would adversely impact use of the refuge by shorebirds.

This use would not contribute to the achievement of the national wildlife refuge purposes or the NWRS mission. A compatibility determination does not need to be prepared to find this an incompatible use, as it has already been found to be incompatible and, by virtue of this document, is now found to be inappropriate.

**LITERATURE CITED:**

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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Jet Skiing (Personal Watercraft)

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?		✓
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?		✓
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes \_\_\_\_\_ No ✓.

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate** ✓ **Appropriate** \_\_\_\_\_

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Jet Skiing (Personal Watercraft)

### **NARRATIVE:**

The Service policy on Appropriate Refuge Uses (603 FW 1) states, “General public uses that are not wildlife dependent recreational uses (as defined by the Improvement Act) and do not contribute to the fulfillment of refuge purposes or goals or objectives as described in current refuge management plans are the lowest priorities for refuge managers to consider. These uses are likely to divert refuge management resources from priority general public uses or away from our responsibilities to protect and manage fish, wildlife, and plants, and their habitats. Therefore, both law and policy have a general presumption against allowing such uses within the Refuge System.”

Personal watercraft are small vessels that use an inboard motor to power a water jet pump as the primary source of power. These machines are operated by persons sitting, standing, or kneeling on the vessel. Jet Ski is a commonly used trademark name for one type of personal watercraft. Personal watercraft are different from conventional boats in terms of design, operation, and use; their shallow draft design allows them to be operated at high speeds in shallow waters and close to shore. They are highly maneuverable and capable of speeds exceeding 75 mph. Common operating practices such as weaving between vessels, jumping wakes, spinning doughnuts, and radically changing course. Some personal watercraft that have a two-stroke engine have a fuel efficiency rating of one to five miles per gallon of unleaded fuel.

This type of watercraft is increasing in numbers during the summer months. This corresponds with the time of year thousands of migratory birds, including the federally threatened piping plover and the federally endangered roseate tern, use the Monomoy Islands to nest, rest, and feed. It is critical that the refuge takes action to minimize disturbance to this important habitat, which includes minimizing disturbance within the intertidal zone. The intertidal zone, also known as the littoral zone, is the land on a coastline that is above the water at low tide and underwater at high tide. Animals and organisms that live in the intertidal zone are an important food source for migratory birds.

Since the shallow draft of a personal watercraft allows it to operate in as little as one foot of water, this allows operators to penetrate nesting areas and enter shallow feeding areas within the intertidal zone. Studies have revealed that the noise caused by the engine, along with the movements and spray associated with the operation of personal watercraft, cause disturbance to feeding and resting wildlife. It had also been documented that, when operating in shallow waters, the jet engines can damage submerged aquatic vegetation, a food source for some ducks and geese and other wildlife.

Nearly half (47 percent) of the refuge, and most (86 percent) of the land lying above mean low water is congressionally designated wilderness, including much of the intertidal lands and waters on the refuge. Operating personal watercraft within wilderness is not allowed due to the restriction on mechanized transport within wilderness areas. Additionally, personal watercraft use would have an adverse effect on this pristine natural area because of the level of air, water, and noise pollution personal watercraft emit. Jet ski use and other personal watercraft use would have a negative impact on the wilderness character at Monomoy Refuge. Personal watercraft are not allowed in the Declaration of Taking area or the wilderness areas.

For impacts to refuge wildlife and to wilderness, the use of Jet Skis and other personal watercraft is not appropriate. This use does not contribute to quality wildlife-dependent recreational use nor does it support the purpose for which the refuge was established.

**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Kiteboarding

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?		✓
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE****Refuge Name:** Monomoy National Wildlife Refuge**Use:** Kiteboarding**NARRATIVE:**

The Service policy on Appropriate Refuge Uses (603 FW 1) states, “General public uses that are not wildlife dependent recreational uses (as defined by the Improvement Act) and do not contribute to the fulfillment of refuge purposes or goals or objectives as described in current refuge management plans are the lowest priorities for refuge managers to consider. These uses are likely to divert refuge management resources from priority general public uses or away from our responsibilities to protect and manage fish, wildlife, and plants, and their habitats. Therefore, both law and policy have a general presumption against allowing such uses within the Refuge System.”

Kiteboarding is a surface water sport that has been described as combining wakeboarding, windsurfing, surfing, paragliding, and gymnastics into one extreme sport. The terms kiteboarding and kitesurfing are interchangeable. Kiteboarding harnesses the power of the wind to propel a rider across the water on a small surfboard or a kiteboard. Large controllable kites ranging in size from .7 square meters to 24 square meters are used to propel the rider and the board across the water. Some riders perform acrobatic stunts as they are being propelled, such as gaining altitude from the surface of the water and jumping objects such as waves and small land masses. Any location with consistent, steady side-onshore winds (10 to 35+ knots), large open bodies of water, and good launch areas is suitable for kiteboarding. Most kiteboarding takes place along ocean shores, usually off beaches. Since kiteboarding relies heavily on favorable, consistent wind conditions, certain locations tend to become popular and sought out by kiteboarders. Several of these locations have been identified off the west and east sides of Monomoy National Wildlife Refuge (refuge), specifically the barrier islands of North Monomoy Island, South Monomoy, and Minimoy Island. These areas within and adjacent to the refuge have favorable winds and adequate water. The refuge is also attractive to kiteboarders as they have access to nearby dry land to stage their gear and equipment and take a rest from the physically demanding activity. Websites provide information about great kiteboarding locations in Chatham, including areas that are along and within the intertidal waters of the refuge ([http://voices.yahoo.com/shared/print.shtml?content\\_type=article&content\\_type\\_id=1201941](http://voices.yahoo.com/shared/print.shtml?content_type=article&content_type_id=1201941), accessed 7/31/2012).

These refuge islands provide important resting, breeding, and feeding habitat for migratory birds, including the federally threatened piping plover and the federally endangered roseate tern. The intertidal zone of these refuge lands are also an important feeding and resting area for migratory birds. Nearly half (47 percent) of the refuge, and most (86 percent) of the land lying above mean low water is congressionally designated wilderness, including much of the intertidal lands and waters on the refuge. This 1970 designation has limited a broad range of human activity within its boundaries. Additionally, the refuge establishes seasonal closures in several locations to protect the habitat and minimize disturbance to wildlife populations. These closures start in early spring when migratory birds arrive and continue through the fall for staging migratory birds. Kiteboarding occurs frequently during the summer months in areas adjacent to many of the closures on both the east and west sides of the refuge islands (Kate Iaquinto 2013 personal communication).

Refuge staff have observed increasing numbers of kiteboarders utilizing the refuge since 2006. This activity has a negative impact on the ability of refuge staff to provide areas undisturbed by human activity for the benefit of migratory birds. Kiteboarders arrive at the refuge with their gear by motorboat and anchor just off shore or directly on the refuge beach including the intertidal zone, often within or adjacent to areas closed for wildlife. The actions of the kiteboarders maneuvering in concentrated areas on top of the water column adjacent to the beach/intertidal zone negatively affect the behavior of birds engaged in feeding, nesting, or

resting. The large sail on the kiteboard has potential to indirectly affect eggs of nesting birds by casting a shadow from the sail on the kiteboard down on the nesting habitat. The nesting birds will leave their nests in an effort to lure the perceived predator (gull/raptor) away from the now exposed eggs. The eggs will not survive long exposed to the summer sun. The birds will continue to leave the nests exposed until the threat is gone. Due to the concentration of kiteboarders in the area, the perceived threat remains until it is too late to ensure survival of the eggs. This defensive behavior is commonly found among several species of birds including the federally endangered piping plover. Refuge staff have observed kiteboarders utilizing areas near Minimoy Island and between North and South Monomoy in the last few years and have several times witnessed kiteboarders causing the tern colonies in these areas to flush (K. Iaquinto 2013 personal communication). In addition to their impact on tern colonies on the refuge, research on the effects of human disturbance at Cape Hatteras National Seashore found that plovers responded more strongly to kite-flying than other forms of human disturbance (Hoopes 1993). Both kite flying and kiteboarding are restricted on Cape Cod National Seashore. Kite flying is prohibited within 656 feet (200 meters) of shorebird nesting areas, and kiteboarding is prohibited on Cape Cod Bay-side beaches and Cape Cod Bay Waters except for the town of Wellfleet Duck Harbor Beach on Cape Cod Bay. The kite surfing/boarding closure on CACO is in effect from April 1 until the last plover chicks have fledged in the area (NPS 2012).

Kiteboarding close to refuge lands comes with its own set of risks. Winds are unpredictable and have the potential to carry a kiteboarder on land resulting in potential injuries to the rider and further disturbance to wildlife.

Kiteboarding is not one of the priority public uses of the Refuge System, nor does the use facilitate the priority public uses of wildlife observation, wildlife photography, environmental education, interpretation, or fishing. Kiteboarding within and adjacent to the designated wilderness area detracts from the wilderness character and the experience of solitude.

#### **LITERATURE CITED:**

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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Mussel Harvesting

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		✓
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Mussel Harvesting

**NARRATIVE:**

The National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57) identifies six uses of wildlife refuges as priority public uses: environmental education, interpretation, hunting, fishing, wildlife observation, and wildlife photography. These recreational uses depend on healthy wildlife populations. Where these uses are determined to be compatible, they are to receive enhanced consideration above other uses in planning and management. Recreational mussel harvesting is considered a priority public use, i.e., fishing; however, commercial mussel harvesting is not a priority public use.

Mussel harvesting occurs in nearshore open waters, in accordance with State and local regulations, along North Monomoy and the western shore of South Monomoy, within the Refuge’s Declaration of Taking boundary. Mussel harvesting is not consistent with goals and objectives in any refuge management plan.

Mussels are an important food source for many migratory birds. We would be providing additional protection for priority wildlife species by not allowing harvest of this species. For example, blue mussels are the most important food item during the winter for common eiders, a Service focal species, congregating in Nantucket Sound (MA DFG 2006). Mussel spat is one of the most important food items of southward migrating red knots (proposed for listing as a threatened species under the Endangered Species Act) using Cape Cod from July through October (Harrington et al. 2010). Mussels are also a common food of American oystercatchers, which typically visually sight these prey in slightly submerged shellfish beds (<http://amoywg.org/american-oystercatcher/food-habits/>; accessed March 2013).

The most common harvest techniques for non-subterranean shellfish (such as dragging and mechanical and hydraulic dredging) are so efficient that mussel beds can be depleted very quickly. Dragging can have severe impacts on subtidal habitat structure by removing large areas of vegetation, such as eelgrass (Neckles 2005).

The Service has statutory authority under the National Wildlife Refuge System Administration Act of 1966 to regulate activities that occur on water bodies within refuge units. In addition, the nearshore open waters and subtidal bottoms within the Declaration of Taking boundary are owned by the United States.

Commercial mussel harvesting as practiced around Monomoy National Wildlife Refuge is considered an economic use of a national wildlife refuge and is guided by the following policies:

16USC668dd, 50 CFR 27.97, “Private Operations. Soliciting business or conducting a commercial enterprise on any national wildlife refuge is prohibited except as may be authorized by special permit.”

16USC668dd, 50 CFR, Subpart A, 29.1, Allowing Economic Uses on National Wildlife Refuges

“We may only authorize public or private economic use of the natural resources of any national wildlife refuge, in accordance with 16 U.S.C. 715s, where we determine that the use contributes to the achievement of the national wildlife refuge purposes or the National Wildlife Refuge System mission...”

Mussel harvesting is therefore determined to be not appropriate.

**LITERATURE CITED:**

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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Recreational Over-sand Vehicle Use

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?		✓
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		✓
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Recreational Over-sand Vehicle Use

### NARRATIVE:

The majority of Monomoy National Wildlife Refuge uplands were included in the Monomoy Wilderness designated in 1970 (P.L. 91-504) as part of the National Wilderness Preservation System. The Wilderness Act prohibits the use of motorized equipment and mechanized transport within designated wilderness. An exception for the use of aircraft and motorboats in areas where that use was previously established and deemed desirable by the Secretary to continue does apply to Monomoy NWR, but does not extend to motorized vehicles. The Wilderness Act does allow provide an exception for emergencies involving the health and safety of persons within the wilderness area.

At Monomoy, visitors wishing to use over-sand vehicles (OSV) would travel both on the beach and through the inland portion of the refuge. This would be potentially damaging to four main groups of wildlife; nesting and roosting shorebirds and seabirds, northeastern beach tiger beetle adults and larvae, and marine mammals, all of which use the beach and intertidal areas as a critical part of their habitat. More specifically, the use of OSVs on Monomoy NWR is not consistent with the Piping Plover, Northeastern Beach Tiger Beetle, and Roseate Tern Recovery Plans.

The piping plover is a federally endangered species that relies on Monomoy's beaches for nesting. Off-road vehicles can significantly degrade piping plover habitat (Wheeler 1979) or disrupt the birds' normal behavior patterns (Zonick 2000). The 1996 Atlantic Coast recovery plan cites tire ruts crushing wrack into the sand, making it unavailable as cover or as foraging substrate (Hoopes 1993, Goldin 1993). The plan also notes that the magnitude of the threat from off-road vehicles is particularly significant, because vehicles extend impacts to remote stretches of beach where human disturbance would otherwise be very slight (USFWS 2009, USFWS 1996). The common tern colony on the refuge is very sensitive to human disturbance as well, and intrusion into the colony by OSVs would result in temporary and/or permanent nest abandonment and direct mortality of unfledged chicks or unhatched eggs.

The northeastern beach tiger beetle recovery plan also sites impacts to beetles, particularly in the larval stage, from OSVs. The plan states that vehicles may physically compact the beach substrate and/or disrupt thermal and moisture microhabitat gradients that are important for larvae (Schultz 1988). In a survey on Assateague Island, Maryland (Knisley and Hill 1992), tiger beetle adults and larvae of *Cicindela dorsalis media* were absent from a section of beach that received heavy ORV use, but present on either side of the ORV zone (USFWS 1994). The extirpation of the northeastern beach tiger beetle from most of its range has been attributed primarily to destruction and disturbance of natural beach habitat from shoreline developments, beach stabilization structures, and high recreational use, all of which are thought to affect the larval stage (Knisley et al. 1987). In addition, extensive surveys completed prior to listing indicated that this tiger beetle was rarely found on beaches with heavy public use or OSV access. Studies have also shown that mortality of early instars increases in direct proportion to the level of human use, including foot traffic (USFWS 1994).

OSVs also pose a threat to staging roseate terns that use South Beach and South Monomoy Island in large numbers. The 2010 5-Year Review of the Caribbean Roseate Tern and North Atlantic Roseate Tern (*Sterna dougallii dougallii*) Recovery Plan states, "Although they generally congregate at the ends of barrier beaches or at other sites that are relatively remote from human activity, they are regularly disturbed there by pedestrians, dogs and vehicles (Trull et al. 1999; MAS and J. Spendelow, unpubl. data). They do not allow such close approach at the staging sites as they do at the breeding sites, and consequently spend much time flying, especially at high tides when space is limited for both birds and humans."

Seals that are loafing on the beach are subjected to harassment and will abandon their resting sites upon the approach of an OSV. This would be a violation of the Marine Mammal Protection Act.

The National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57) identifies six legitimate and appropriate uses of wildlife refuges; environmental education, interpretation, hunting, 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. All other recreational uses are now considered general uses. As noted in the Appropriate Use Policy: “General public uses that are not wildlife-dependent recreational uses (as defined in the Improvement Act) and do not contribute to the fulfillment of refuge purposes, or goals, or objectives as described in current refuge management plans are the lowest priorities for refuge managers to consider. These uses are likely to divert refuge management resources from priority general public uses or away from the responsibilities to protect and manage fish, wildlife, and plants and their habitats. Therefore, both law and policy have a general presumption against allowing such uses within the Refuge System.”

Allowing the use of OSVs on the refuge is not a priority public use, but a general use. This use does not, as a standalone activity, contribute to the fulfillment of refuge purposes, and would detract from the refuge staff’s responsibilities to protect and manage fish, wildlife, and plants and their habitats, as well as detract from administering priority uses. The use of over-sand vehicles is not consistent with two executive orders, E.O. 11644 and E.O. 11989, which require that refuges promote safety, minimize conflicts among users, monitor effects of off-road vehicles use if allowed, and close areas to use of OSVs if they will cause adverse effects on soil, vegetation, wildlife, habitat or cultural or historic resources. Potential impacts include: soil compaction and erosion, trampling and mortality of fragile plant communities, habitat loss/deterioration, a shift in plant communities along trails, wildlife disturbance, and a concern for safety due to excessive speed of OSV users. This use is not consistent with any approved refuge management plan and would divert existing and future resources from accomplishing priority tasks. We do not believe it would contribute to public appreciation or understanding of refuge resources and we believe it could cause conflicts with priority public uses. It would be a violation of the National Wilderness Preservation Act as well. The refuge does not have the facilities or staff to manage this use. Therefore, the general use of OSVs is determined to be inappropriate and will not be allowed on Monomoy NWR.

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- Knisley, C.B. and J.M. Hill. 1992. Effects of habitat change from ecological succession and human impact on tiger beetles. *Virginia J. Sci.* 43: 133-142.
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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Pets

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		✓
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE****Refuge Name:** Monomoy National Wildlife Refuge**Use:** Pets**NARRATIVE:**

The Service policy on Appropriate Refuge Uses (603 FW 1) states, “General public uses that are not wildlife-dependent recreational uses (as defined by the Improvement Act) and do not contribute to the fulfillment of refuge purposes or goals or objectives as described in current refuge management plans are the lowest priorities for refuge managers to consider. These uses are likely to divert refuge management resources from priority general public uses or away from our responsibilities to protect and manage fish, wildlife, and plants, and their habitats. Therefore, both law and policy have a general presumption against allowing such uses within the Refuge System.”

Pets are any considered any domesticated animal either accompanied or not accompanied by an owner. This includes, but is not limited to, dogs, cats, pigs, ferrets, parrots, snakes, and horses. In the past, dogs on leash were allowed on the Morris Island portion of the refuge. Numerous documented violations of the leash requirement occurred annually. Failure of pet owners to comply with refuge regulations is part of the justification for discontinuing pet walking on the refuge. Additionally, it has been demonstrated that dogs and other pets can have a significant impact on wildlife. Jones and Stokes (1977) demonstrated that domesticated dogs have serious detrimental impacts on local concentrated nesting bird populations. Studies have demonstrated that dogs can, and do, flush incubating birds from nests with possible serious consequences to declining bird populations (Yalden and Yalden 1990, Soluri 1994, Gill 1994). Further, the presence of domesticated dogs can disrupt breeding displays (Baydack 1986), disrupt foraging activity in shorebirds (Hoopes 1993), and disturb roosting activity in ducks (Keller 1991). Other studies have shown that even when dogs are restrained on leash, they have the ability to displace native migratory bird species from natural habitats and cause a depauperate local bird fauna (Banks and Bryan 2007).

Additionally, a study of shorebird disturbance from humans and dogs found that gulls recovered faster from disturbance than did smaller shorebird species (Burger et al. 2007). This rapid recovery time could give competitive advantage to gulls for prime habitat over other shore birds that are a focus of refuge management goals. In winter, the energy expenditure used by birds to avoid dogs, which are seen as potential predators, is unnecessary and avoidable and could contribute to reduced survivability. Dog waste is unsightly for refuge visitors, and can transmit diseases that may threaten the health of some wildlife and other domesticated animals. The refuge does not provide receptacles for animal waste, which if left along the refuge’s single small trail, diminishes the quality of the visitor’s wildlife recreational experience. Domestic dogs can potentially introduce various diseases (distemper, parvovirus, rabies) and transport parasites into wildlife habitats (Sime 1999). Additionally, not all refuge visitors are pet friendly, and unrestrained dogs can disturb refuge visitors.

The Town of Chatham prohibits dog use from town beaches from April 1 through September 15 but allows dog walking the remainder of the year. These town beaches provide more land for public dog walking and play than does the 46-acre Morris Island tract on the refuge, and allow pet recreationalists to disperse over a greater area, decreasing the likelihood that an individual pet will disrupt wildlife or have a negative interaction with wildlife-dependent recreationists. To ensure the protection of wildlife and habitat, provide quality wildlife-dependent recreation opportunities, and support the refuge’s establishing purpose for migratory birds and endangered species, the refuge has determined the presence of pets to be not appropriate on Monomoy National Wildlife Refuge.

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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Organized Picnicking

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?		✓
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?		✓

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Organized Picnicking

**NARRATIVE:**

Service policy does not encourage picnicking, although it is recognized to occur incidentally to the priority public uses described in the Refuge System Improvement Act of 1997. The refuge does not provide amenities for any large-scale or organized gatherings for this activity. Allowing this activity would enable visitors to bring a picnic meal and eat, while not participating in wildlife-dependent recreation. Introducing food to the beach ecosystem would encourage scavengers and likely impact the natural balance of the food chain, potentially causing harm to priority species the refuge seeks to protect. This use could have potentially significant adverse impacts on refuge wildlife and habitat and would require monitoring by refuge staff above refuge resource capacity. In addition, the use is expected to detract from the mission of the National Wildlife Refuge System and potentially diminish the purpose for which the refuge was established. For these reasons, organized picknicking is found to be not an appropriate use.

This finding for organized picnicking should not be read as banning all food and drink on the refuge. We understand that those engaged in most permitted uses of the refuge will bring food and drink, as appropriate, for consumption while engaged in those uses, and we take this into account in analyzing the impacts of those uses. The refuge is a leave-no-trace, carry-in-carry-out facility. All food containers, bottles, and other waste and refuse must be taken out. Littering, dumping, and abandoning property are prohibited by Federal regulation at 50 C.F.R. 27.93.94.

**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Stage Island Parking and Dinghy Storage

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?		✓
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?		✓
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?		✓
(h) Will this be manageable in the future within existing resources?		✓
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Stage Island Parking and Dinghy Storage

**NARRATIVE:**

Tract 7b is a small (100 foot x 75 foot lot with a 20-foot-wide right-of-way) waterfront parcel located on Stage Harbor in Chatham. Access to this small parcel for vehicle parking and dinghy storage on Stage Harbor has been granted to private individuals (by permit only) since at least 1984. Tract 7b access to Stage Harbor is controlled by a chain gate with combination padlock. The Stage Harbor lot is predominantly a non-vegetated, improved gravel parking lot (maximum capacity - 8 vehicles) that grades gently down to a narrow strip of unimproved, natural sand beach and intertidal zone fronting 75 feet on Stage Harbor.

Dinghy storage, launching and landing, and associated vehicle parking at Stage Harbor Lot 7b are not priority public uses of the Refuge System, nor do they facilitate the priority public uses of wildlife observation, wildlife photography, environmental education, interpretation, or fishing. Hunting is not permitted on Monomoy NWR.

Use of this parcel for vehicle parking and dinghy storage provides an economic benefit to a small, select group of private individuals. Several commercial shellfish harvesters have renewed their permits annually to access the Stage Harbor waterfront or their nearby boat moorings (locations assigned by the Town of Chatham Harbormaster). The remaining permit holders are property owners in the Stage Island and Quitneset neighborhoods who have boats moored near the Stage Harbor lot. The economic benefit to these permittees comes largely in the form of time and fuel savings when accessing their private boats and moorings. Economic uses of the refuge by private individuals must contribute to the purposes of the refuge. No benefits to the refuge wildlife or wilderness stewardship purposes are provided by allowing this use to continue beyond the small revenue from permit fees. The \$35 annual permit fee collected from 5 to 10 permits annually falls well short of refuge costs for administering and enforcing the permit system.

Monomoy National Wildlife Refuge currently receives no funding for managing wildlife-dependent recreational uses and has no positions dedicated to managing such uses, law enforcement, or continuing to administer the permit system employed in recent years. Providing for this use is not possible within the available budget or staffing now or into the future with existing refuge resources. Approximately \$2,000 in refuge funds and 8 days of staff time annually must be diverted from refuge projects intended for managing migratory birds and other federally listed endangered or threatened species to administer a permit system that benefits 5 to 10 individuals per year. This administrative burden on refuge resources impairs rather than benefits refuge natural and cultural resource management.

Refuge staff require unencumbered access to the waterfront and the entire Stage Harbor lot for daily operational refuge management purposes. Our use of this lot has increased with the siltation of the Morris Island Channel. Having privately owned parked vehicles and dinghies stored on this small parcel results in congestion and potential safety conflicts between refuge vehicles, boats, equipment, and personnel and private vehicles and waterfront storage space. This conflict is avoidable by eliminating all private use of this refuge parcel. Alternative public and private boat access, storage, and vehicle parking sites are available off refuge lands along the shoreline of Stage Harbor at Stage Harbor Marine near the Mitchell River Bridge, at the Town of Chatham Harbormaster's offices, and for carry-in boat access from the Morris Island Road Causeway.

Stage Island parking and dinghy storage is found to not be an appropriate use.



**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Beachcombing

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Beachcombing

### **NARRATIVE:**

The Service policy on Appropriate Refuge Uses (603 FW 1) states, “General public uses that are not wildlife-dependent recreational uses (as defined by the Improvement Act) and do not contribute to the fulfillment of refuge purposes or goals or objectives as described in current refuge management plans are the lowest priorities for refuge managers to consider. These uses are likely to divert refuge management resources from priority general public uses or away from our responsibilities to protect and manage fish, wildlife, and plants, and their habitats. Therefore, both law and policy have a general presumption against allowing such uses within the Refuge System.” Beachcombing is not specifically identified as a priority public use in the National Wildlife Refuge System Improvement Act of 1997, but beachcombing often leads to wildlife observation and interpretation, which are priority public uses.

Beachcombing must be conducted in accordance with refuge regulations, including seasonal closures. Beachcombing would be limited to the collection of small amounts of seashells and stones. The collection of living plants or animals or shells that have living organisms in them would not be allowed. Allowing visitors to pick up shells and beach debris and take home a small amount of shells and stones from the refuge will encourage an appreciation for the beach and marine environment. While this activity can have negative impacts on wildlife and habitat, as invertebrates that are a food source for shorebirds are at times attached to shells and other pieces of marine debris, it will not be conducted in areas being used by resting, nesting, or feeding wildlife. Visitor use will be restricted in time and place to minimize disturbance to wildlife, if the number of people engaged in this activity exceeds our relatively low expectation.

Allowing visitors to collect small amounts of shells and stones while beachcombing will contribute to public appreciation of Monomoy NWR. Costs associated with administering these uses and likely visitor impacts are both minimal. These uses will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purpose of Monomoy NWR. Therefore, it is the determination of the Service that beachcombing is a compatible use of the refuge.

## COMPATIBILITY DETERMINATION

### **USE:**

Beachcombing

### **REFUGE NAME:**

Monomoy National Wildlife Refuge

### **DATE ESTABLISHED:**

June 1, 1944

### **ESTABLISHING AND ACQUISITION AUTHORITY(IES):**

Migratory Bird Conservation Act (16 U.S.C. § 715d) Public Law 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. § 715d).

“...wilderness areas...shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness. (P.L. 88-577 §2(a), Wilderness Act; as referenced in P.L. 91-504 § 1(g), An Act to Designate Certain Lands as Wilderness).

### **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?**

This use involves walking along the beach and picking up shells, plants, wildlife, and other refuge resources. The collection of small amounts of shells and stones can also occur.

#### **(b) Is the use a priority public use?**

Beachcombing is not specifically identified as priority public uses in the National Wildlife Refuge System Improvement Act of 1997, but beachcombing often leads to wildlife observation and interpretation, which are priority public uses.

#### **(c) Where would the use be conducted?**

Beachcombing could occur on any areas of Monomoy NWR that are open to public access. Public access is dictated by wildlife use and presence of sensitive vegetation. In general, much of the intertidal area through the dune system is open for much of the year. Some areas of beach berm are closed seasonally to protect seals,

nesting shorebirds, and seabirds. Visitors should contact Monomoy NWR staff for up-to-date information on seasonal closures. Information about closures will also be available on the refuge Web site.

**(d) When would the use be conducted?**

Beachcombing could occur any time of the year in any areas open to public access during regular refuge hours. Use for these activities is likely to be highest in the summer and early fall. Monomoy NWR is open daily from ½ hour before sunrise to ½ hour after sunset, year-round. The Morris Island non-wilderness portion of the refuge is open for recreational saltwater fishing 24 hours daily.

**(e) How would the use be conducted?**

Beachcombing must be conducted in accordance with refuge regulations, including seasonal closures. Beachcombing would be limited to the collection of small amounts of seashells and stones mainly done during the low tide cycle. The collection of living plants or animals or shells that have living organisms in them would not be allowed.

**(f) Why is this use being proposed?**

Beachcombing has historically occurred on Monomoy NWR. Affording opportunities for public enjoyment by collecting small amounts of shells and stones through beachcombing will increase visitor appreciation and foster a greater awareness of the importance of this site to the National Wildlife Refuge System.

**AVAILABILITY OF RESOURCES:**

Beachcombing is often one of many incidental activities that refuge visitors engage in when on the refuge. As such, we do not anticipate refuge costs associated with this activity alone.

**ANTICIPATED IMPACTS OF THE USE:**

The proposed use is anticipated to have the same level of impacts as priority public uses, because the access and activities are very similar. These activities occur only in open areas of the refuge, therefore, natural resource and wilderness character impacts of beachcombing will likely be minimal if conducted in accordance with refuge regulations. Possible impacts include disturbing wildlife, trampling of plants, littering, and vandalism. Beachcombing may intermittently interrupt the feeding habits of a variety of shorebirds, gulls, and terns. The removal of shells, wrack, and other natural debris from the beach may indirectly affect wildlife by reducing food availability and microhabitat used by invertebrates, which are preyed upon by shorebirds. Seals could be flushed into the water from their loafing spots on the beach, which could result in a slight increase in energy expenditure by the seals.

Pedestrian travel has the potential of impacting seals, shorebird, waterfowl, and other migratory bird populations feeding and resting on beaches during certain times of the year. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). Response of wildlife to human activities includes departure from site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschgen et al. 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschgen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990).

Numerous studies have documented that migratory birds are disturbed by human activity on beaches. Erwin (1989) documented disturbance of common terns and skimmers and recommended that human activity be restricted to a distance of 100 meters around nesting sites. In studying waterbird response to human disturbance, Klein (1993) found that, as intensity of disturbance increased, avoidance response by the birds increased, and found out-of-vehicle activity to be more disruptive than vehicular traffic. Pfister et al. (1992) found the impact of disturbance was greater on species using the heavily disturbed front side of the beach, with the abundance of the impacted species being reduced by as much as 50 percent. In studying the effects of

recreational use of shorelines on nesting birds, Robertson et al. (1980) discovered that disturbance negatively impacted species composition. Piping plovers, which intensively use the refuge, are also impacted negatively by human activity. Pedestrians on beaches may crush eggs (Burger 1987, Hill 1988, Shaffer and Laporte 1992, Cape Cod National Seashore 1993, Collazo et al. 1994). Dogs may chase plovers (McConnaughey et al. 1990), destroy nests (Hoopes et al. 1992), and kill chicks (Cairns and McLaren 1980). Other studies have shown that if pedestrians cause incubating plovers to leave their nest, the eggs can overheat (Bergstrom 1991) or can cool to the point of embryo death (Welty 1982). Pedestrians have been found to displace unfledged chicks (Strauss 1990, Burger 1991, Hoopes et al. 1992, Loegering 1992, Goldin 1993).

Several studies have examined the effects on birds of recreation using shallow water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981, 1986, Klein 1993, Burger et al. 1995, Klein et al. 1995, Rodgers and Smith 1995, 1997, Burger and Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreational activities always has at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986, Klein 1993, Burger et al. 1995, Klein et al. 1995, Rodgers and Smith 1997, Burger and Gochfeld 1998). The findings that were reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

**Presence:** Birds avoided places where people were present and when visitor activity was high (Burger 1981, Klein et al. 1995, Burger and Gochfeld 1998).

**Distance:** Disturbance increased with decreased distance between visitors and birds (Burger 1986), though exact measurements were not reported.

**Approach Angle:** Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger and Gochfeld 1981, Burger et al. 1995, Knight and Cole 1995, Rodgers and Smith 1995, 1997).

**Type and Speed of Activity:** Joggers and landscapers caused birds to flush more than fishermen, clammers, sunbathers, and some pedestrians, possibly because the former groups move quickly (joggers) or create more noise (landscapers). The latter groups tend to move more slowly or stay in one place for longer periods, and thus birds likely perceive these activities as less threatening (Burger 1981, 1986, Burger et al. 1995, Knight and Cole 1995). Alternatively, birds may tolerate passing by with unabated speed, but may flush if the activity stops or slows (Burger et al. 1995).

**Noise:** Noise caused by visitors resulted in increased levels of disturbance (Burger 1986, Klein 1993, Burger and Gochfeld 1998), though noise was not correlated with visitor group size (Burger and Gochfeld 1998).

Beachcombing will be restricted to minimize disturbance through beach closures or allowing the use during certain hours of the day. Although some disturbance to migratory birds will occur, it should be minimal due to the location of the activity. Much of the beach area would not be impacted and closures are in place to protect nesting, resting, and foraging piping plovers, other shorebirds, staging terns, and other waterbirds. In the event of persistent disturbance to habitat or wildlife, these activities will be further restricted or discontinued.

Pedestrians are required to observe a 150-foot buffer around all seals. At Monomoy NWR, seal haulout locations regularly change; given the amount of shoreline accessible to seals, it is not practical to erect symbolic fencing to separate visitors from the seals. Compliance with the buffer, which was established to protect the seals under the Marine Mammal Protection Act, will decrease impacts to seals.

Heavy beach use can dry out the sand and contribute to beach erosion. Trash left on the beach, particularly food or wrappers, can attract predators that prey on nesting piping plovers and least terns or roosting shorebirds. Impacts of walking are likely to be minimal if conducted in accordance with refuge regulations. We will manage refuge closures to minimize pedestrian disturbance to priority avian species during critical times of the year. Closures can be expanded or contracted as needed depending on bird activity and results of further disturbance studies. The refuge is a leave-no-trace, carry-in-carry-out facility. All food containers, bottles,

and other waste and refuse must be taken out. Littering, dumping, and abandoning property are prohibited by Federal regulation at 50 C.F.R. 27.93.94.

All of North Monomoy Island and most of South Monomoy are designated wilderness and are part of the National Wilderness Preservation System. Wilderness, in contrast with those areas where humans and their works dominate the landscape, is an area where the Earth and its community of life are untrammelled by humans, where humans are visitors who do not remain. Preserving wilderness character requires that we maintain both the visible and invisible aspects of wilderness. Aspects of wilderness character include maintaining the natural, scenic condition of the land; providing environments for native plants and animals, including those threatened or endangered; maintaining watersheds and airsheds in a healthy condition; maintaining natural night skies and soundscapes; retaining the primeval character of and influence on the land; serving as a benchmark for ecological studies; and providing opportunities for solitude, primitive and unconfined outdoor recreation, risk, adventure, education, personal growth experiences, a sense of connection with nature and values beyond one's self, a link to our American cultural heritage, and mental and spiritual restoration in the absence of urban pressures. We provide opportunities for appropriate and compatible use and enjoyment of wilderness areas in a manner that will preserve their wilderness character and "leave them unimpaired for future use and enjoyment as wilderness."

Beachcombing is consistent with the enjoyment and preservation of wilderness, as long as only small amounts of seashells and stones are collected. Beachcombing does not alter the natural, scenic condition of the land and will not occur at a scale big enough to diminish the environment for native plants and animals. Beachcombing is usually conducted in a solitary manner or in a very small group. It specifically provides opportunities for individuals to connect with nature and wildlife. Given the few number of visitors at the refuge who engage in beachcombing within the wilderness area, no negative impacts on wilderness character are anticipated.

**PUBLIC REVIEW AND COMMENT:**

As part of the comprehensive conservation planning (CCP) process for the Monomoy National Wildlife Refuge, this compatibility determination will undergo a 60-day public comment period concurrent with the release of our draft CCP/Environmental Impact Statement.

**DETERMINATION (CHECK ONE BELOW):**

- Use is not compatible
- Use is compatible, with the following stipulations

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

Beachcombing will only be allowed on sections of the beach that are open for public use. The beach is subject to seasonal closures for staging and breeding plovers, other shorebirds, seabirds, and seals. Areas that are open to this use will be evaluated on an annual, seasonal, and sometimes daily basis and will be influenced by beach geomorphology and wildlife use. Seasonal closures will vary year to year based on wildlife use and habitat conditions. Visitors will be expected to comply with closures. Updates on closures will be available at the Monomoy Headquarters and on the refuge Web site.

Occasional law enforcement patrol and regular staff or partner presence should minimize potential violations. Refuge regulations will be posted and enforced.

Visitors will be provided information to ensure that they understand the value of shells, wildlife, stones, and plants on the refuge, particularly in the wrack line. Visitors will be informed to collect only small amounts of shells and stones. The collection of plants, living animals, and archaeological and historical artifacts will not be permitted.

Periodic evaluations will be done to ensure that visitors are not causing unacceptable adverse impacts. Areas open to these uses will be evaluated on an annual basis depending on geomorphology and wildlife use.

**JUSTIFICATION:**

Allowing visitors to collect small amounts of shells and stones while beachcombing will contribute to public appreciation of Monomoy NWR. Costs associated with administering these uses and likely visitor impacts are both minimal. These uses will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purpose of Monomoy NWR. Therefore, it is the determination of the Service that beachcombing is a compatible use of the refuge.

**SIGNATURE:**

Refuge Manager: \_\_\_\_\_  
(Signature) (Date)

**CONCURRENCE:**

Regional Chief: \_\_\_\_\_  
(Signature) (Date)

**MANDATORY 10 YEAR RE-EVALUATION DATE:** \_\_\_\_\_

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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Commercial Tours, Ferry Service, Guided Trips, and Outfitting

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

## JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Commercial Tours, Ferry Service, Guided Trips, and Outfitting

### **NARRATIVE:**

Commercial guiding and outfitting, and natural and cultural history guide and tour activities generally support refuge purposes and have positive effects on the overall interpretive, environmental education, and wildlife observation programs of the refuge. Some of these commercial services will occur within the Monomoy wilderness. Commercial services may be allowed in wilderness areas, per the Wilderness Act (Public Law 88-577), if they support recreational or other wilderness purposes of the wilderness area. The minor resource impacts attributed to these activities are generally outweighed by the benefits gained by educating present and future generations about refuge resources. Guided natural history tours are a public use management tool intended to develop a resource protection ethic within society. This tool allows us to educate refuge visitors about endangered and threatened species management, wildlife management, ecological principles and communities, and wilderness values and ethics. A secondary benefit of this use is that it instills an ownership or stewardship mentality in visitors, which helps reduce vandalism, littering, and poaching; it also strengthens Service visibility in the local community. Cultural history activities allow visitors to learn about the artifacts left in an area and gain an appreciation for the lands involved and the refuge purpose.

Issuing special use permits and concession permits for commercial guiding and outfitting does not significantly impact biological resources for which the refuge was established and requires no additional facilities. The administrative requirement is minimal. This activity has a positive effect on the overall interpretive, environmental education, and wildlife observation programs of the refuge, reaching a much larger audience. This use would contribute to the mission of the refuge by increasing the audience that receives the message of the Service, producing a greater appreciation of wildlife resources in participants, and building relationships between the refuge and area businesses.

Shifting channels, bars, and shoals, and strong ocean currents make boat travel between the Monomoy Islands and the mainland a challenge for even the most experienced mariner. Commercial ferries provide a safe alternative for visitors to explore beyond the mainland portion of the refuge. Visits to the islands occur during daylight hours only, particularly midday when migratory bird activity is diminished, and ferry service is offered May through September only. Guided tours for recreational saltwater fishing enhance the experience of many anglers, particularly those who are not familiar with Monomoy NWR and the Monomoy wilderness or do not have the means to get to prime fishing spots on their own. Ferry service provided by a concession or an off-site ferry provider facilitates several priority public uses and allows visitors to access certain locations on the refuge that are otherwise challenging to get to on foot.

We do not expect pedestrian access to materially interfere with or detract from the mission of the National Wildlife Refuge System or diminish the purpose for which the refuge was established. It will not pose significant adverse effects on refuge resources, interfere with public use of the refuge, or cause an undue administrative burden. For these reasons, commercial guides, tours, outfitting, and ferry use are appropriate uses on Monomoy NWR.

## COMPATIBILITY DETERMINATION

### USE:

Commercial Tours, Ferry Service, Guided Trips, and Outfitting

### REFUGE NAME:

Monomoy National Wildlife Refuge

### DATE ESTABLISHED:

June 1, 1944

### ESTABLISHING AND ACQUISITION AUTHORITY(IES):

Migratory Bird Conservation Act (16 U.S.C. § 715d) Public Law 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. § 715d (Migratory Bird Conservation Act).

“...wilderness areas...shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness. (PL 88-577 § 2(a), Wilderness Act; as referenced in P.L. 91-504 § 1(g), An Act to Designate Certain Lands as Wilderness).

### 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?

This use is any fee-based service providing recreational, educational, or interpretive enjoyment of refuge lands and waters to the visiting public such as transportation, interpretation, educational materials, and programs. The services must aim to enhance the refuge visitor’s knowledge and enjoyment of the key natural resources, including wilderness, and the mission of Monomoy National Wildlife Refuge (Monomoy NWR; refuge) and the U.S. Fish and Wildlife Service, or other uses otherwise determined appropriate and compatible with the purposes for refuge establishment, including guided wildlife observation or photography, natural history or cultural history tours; transport of individual or groups (most commonly by boat) to or from refuge lands for recreational fishing, wildlife observation or photography, nature study or interpretation, and other wildlife-oriented activities, or hiking or walking to experience the naturalness or solitude of the Monomoy Wilderness; and guiding and outfitting other compatible outdoor activities on refuge lands such as, but not limited to, birding or recreational fishing and associated transportation (typically by boat) and accommodations. Some of

these typically commercial services will occur within the Monomoy wilderness, and if so, they are determined to be necessary for realizing the recreational or other wilderness purposes of the Monomoy wilderness. The use may be conducted by a Service conservation partner, concessionaire, or private concern but will fall under the general heading of eco-tourism. In all cases, participants pay a fee to the individual guide, business, or a nonprofit organization for the unique skills, equipment, and expertise of the leader who enhances the experience of the participating individual or party on refuge lands.

**(b) Is the use a priority public use?**

Commercial tours and ferry services conducted by a concessionaire, guide, or outfitter are not priority public uses of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). While not a priority use, this use does support several wildlife-dependent priority uses including waterfowl hunting, fishing, wildlife observation and photography, environmental education, and interpretation. The use constitutes a commercial enterprise within wilderness, however commercial services may be allowed in wilderness areas, per the Wilderness Act (Public Law 88-577), if they support recreational or other wilderness purposes.

**(c) Where would the use be conducted?**

The use would occur on any refuge lands or waters within the Declaration of Taking boundary that are open to public access, including the Monomoy wilderness. Certain areas on Monomoy NWR are seasonally closed to public access, at the refuge manager's discretion, to protect sensitive habitats or species of concern, minimize conflicts with other refuge activities, or respond to human health and safety concerns. All commercial touring, ferry operations, guiding and outfitting activities will be restricted from access to sensitive areas prone to disturbance (e.g., sensitive vegetation areas) or degradation (e.g., soil compaction), and will be conducted in a manner that minimizes impacts to nesting birds or other breeding, feeding, or resting wildlife. Commercial ferry service, tours, guides, and outfitters transporting visitors to designated landing sites on North Monomoy Island and South Monomoy would originate from designated facilities either on the refuge (Morris Island), or from one or more off-refuge locations such as Outermost Harbor, Stage Harbor, Chatham Harbor, or Harwichport.

**(d) When would the use be conducted?**

The use will be largely seasonal and dictated by weather, and would occur during daylight hours when weather is appropriate generally from May through November. Monomoy NWR is open daily from ½ hour before sunrise to ½ hour after sunset, year-round. The Morris Island portion of the refuge is open for licensed recreational, saltwater fishing 24 hours daily.

**(e) How would the use be conducted?**

Guided tours typically consist of an individual or group including a leader or guide walking on established trails or open refuge areas learning about plant and wildlife species, natural processes and wetlands, and cultural history such as the Monomoy Point Lighthouse and keeper's residence. For offshore tours, participants are ferried by boat to designated boat landing sites, and then hike to one or more intended destinations. Commercial guides may provide intensive, individual guidance to refuge visitors most often engaged in birding and recreational saltwater fishing, as the refuge is a prime birding, surf fishing, and fly fishing location. Guides may also be employed by individuals or groups to enhance priority public use experiences, including photography or bird watching. In all cases, participants pay a fee for the professional expertise, a unique skill or equipment, and transportation to refuge lands and waters. Tours are generally offered on a seasonal basis (seal and boat tours). Nonmotorized eco-tour outings to Monomoy via kayak, catamaran (sailing), or backpacking offer future expansion potential to more fully realize recreational and other wilderness purposes, while preserving wilderness character.

All guides and tour operators would be required to obtain a permit (concession or special use), and comply with all refuge regulations and with State and Federal guidelines for terns, piping plovers, marine mammals, and coastal dune protection. Special use permits are required for trips originating from offsite locations. A concession contract would be required for trips involving any exclusive use of refuge land and facilities for organizations, outfitters, and individual guides conducting tour activities on Monomoy NWR. All Monomoy NWR visitors are expected to stay apprised of and respect all closures and regulations. Information on annual, seasonal, and daily closures, known hazards, and other regulations will be disseminated from the Morris Island headquarters, and closures will be well-marked with informational signs or symbolic fencing.

**(f) Why is this use being proposed?**

Monomoy NWR is a world-renowned birding destination, a destination for seal and whale watching tours (and potentially great white shark tours), as well as the only coastal barrier complex unit in the National Wilderness Preservation System in New England, and remains a popular destination for recreational saltwater angling. A viable, local wildlife-fish tour and charter boat ecotourism industry emerged in the Chatham vicinity and established itself over the past two decades, with Monomoy as a focal point. The private sector stands willing and able to provide such services for a reasonable fee.

The refuge historically receives requests from one to five commercial operators and nonprofit organizations annually for permits to transport and guide individuals or groups of visitors on trips to Monomoy and surrounding waters within the Declaration of Taking boundary. Two of the permits issued annually go to operators whose trips originate from nearby, off-refuge locations. However, one of the first commercial seal tour and ferry services established in the area has operated continuously from refuge facilities under a special use permit (fee) that includes access to parking, public restrooms, interpretive trails, and waterfront access on Morris Island (headquarters and visitor contact station). Visitation to the Morris Island site has grown as the popularity of both Monomoy NWR and the seal tour has increased over nearly two decades. Current refuge parking no longer accommodates the demand for spaces on most days during June through August, resulting in considerable traffic congestion at the Morris Island site and nearby private roadways, increased risk of vehicle-pedestrian accidents, and complaints from neighboring private property owners. There is no further opportunity to expand parking at the refuge Morris Island site. Overflow parking along the east public shoulder of Morris Island Road, while permitted by the Town of Chatham, is not without hazards for motorists, pedestrians, bicyclists, and emergency responders.

Guided tours, outfitters, and ferry services are a way during daylight hours to get wildlife-dependent and fish-dependent recreation users to and from refuge destinations that are not otherwise accessible by foot. The Monomoy Wilderness offers areas with outstanding opportunities for unconfined, primitive, outdoor, day-use recreation and solitude, and the proposed use would aid wilderness users to realize those opportunities not otherwise possible. Tours and individual guided sessions will help visitors experience and engage and connect with the key resources of the refuge, including an enduring resource of wilderness. Allowing the use is expected to increase visitor understanding and appreciation of the refuge and its resources and compliance with refuge regulations. Limiting the use of refuge facilities at the headquarters site to a concessionaire will reduce congestion and provide more opportunity for other refuge visitors to find parking.

**AVAILABILITY OF RESOURCES:**

The following breakdown shows the estimated amount of funds needed annually to administer the refugewide tour and ferry fee permits.

GS-11 Visitor Services Manager - permit issuance (concession solicitation/award and special use permit processing)	120 hours	\$5,400
<b>Total new costs</b>		<b>\$5,400</b>
GS-09 Visitor Services Assistant - permit administration, oversight and compliance checks	40 hours	\$1,500
GS-9 Biological Staff – use impact monitoring	40 hours	\$1,500
Facility Maintenance		\$2,000
Materials		<u>\$1,000</u>
<b>Total recurring annual cost</b>		<b>\$6,000*</b>

\* Permit/concession fees will partially/wholly offset agency costs to administer the use.

**ANTICIPATED IMPACTS OF THE USE:**

*Commercial Tours, Guides, and Outfitting*

The access and activities resulting from the proposed use are virtually identical to those under the primary public uses, especially environmental education and interpretation, and the same levels of impacts are expected. Because the use will occur in accordance with refuge regulations and only in refuge areas open to the public,

the impacts of commercial tours, ferry services, guides, and outfitters on natural resource and wilderness character will likely be minimal when conducted in accordance with refuge regulations. Possible wildlife and fisheries impacts include disrupting nesting migratory bird populations, disrupting terns, shorebirds, and other bird populations feeding and resting near the trails during certain times of the year, trampling vegetation and soil, disrupting threatened larval northeast beach tiger beetle populations, disturbing seals, and harvesting fish.

On Monomoy NWR, area closures are created to protect priority nesting migratory tern and shorebird species. Although these closure areas are designed to minimize human impacts, the potential exists for impacts to unobserved nesting animals. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). Response of wildlife to human activities includes departure from site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschgen et al. 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), use of suboptimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschgen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). Numerous studies have documented that migratory birds are disturbed by human activity on beaches. Erwin (1989) documented disturbance of common terns and skimmers and recommended that human activity be restricted to a distance of 100 meters around nesting sites. Pfister et al. (1992) found that the impact of disturbance was greater on species using the heavily disturbed front side of the beach, with the abundance of the impacted species being reduced by as much as 50 percent. In studying the effects of recreational use of shorelines on nesting birds, Robertson et al. (1980) discovered that disturbance negatively impacted species composition. Piping plovers, which intensively use the refuge, are also impacted negatively by human activity. Pedestrians on beaches may crush eggs (Burger 1987, Hill 1988, Shaffer and Laporte 1992, Cape Cod National Seashore 1993, Collazo et al. 1994). Other studies have shown that if pedestrians cause incubating plovers to leave their nest, the eggs can overheat (Bergstrom 1991) or the eggs can cool to the point of embryo death (Welty 1982). Pedestrians have been found to displace unfledged chicks (Strauss 1990, Burger 1991, Hoopes et al. 1992, Loegering 1992, Goldin 1993).

Several studies have examined the effects of recreation on birds using shallow water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981, 1986, Klein 1993, Burger et al. 1995, Klein et al. 1995, Rodgers and Smith 1995, 1997, Burger and Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreational activities always has at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986, Klein 1993, Burger et al. 1995, Klein et al. 1995, Rodgers and Smith 1997, Burger and Gochfeld 1998). The findings that were reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

**Presence:** Birds avoided places where people were present and when visitor activity was high (Burger 1981, Klein et al. 1995, Burger and Gochfeld 1998).

**Distance:** Disturbance increased with decreased distance between visitors and birds (Burger 1986), though exact measurements were not reported.

**Approach Angle:** Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger and Gochfeld 1981, Burger et al. 1995, Knight and Cole 1995, Rodgers and Smith 1995, 1997).

**Type and Speed of Activity:** Joggers and landscapers caused birds to flush more than fishermen, clammers, sunbathers, and some pedestrians, possibly because the former groups move quickly (joggers) or create more noise (landscapers). The latter groups tend to move more slowly or stay in one place for longer periods, and birds likely perceive these activities as less threatening (Burger 1981, 1986, Burger et al. 1995, Knight and Cole 1995). Alternatively, birds may tolerate passing by with unabated speed, but may flush if the activity stops or slows (Burger et al. 1995).

**Noise:** Noise caused by visitors resulted in increased levels of disturbance (Burger 1986, Klein 1993, Burger and Gochfeld 1998), though noise was not correlated with visitor group size (Burger and Gochfeld 1998).



Trash left on the beach, particularly food or wrappers, can attract predators that prey on nesting piping plovers and least terns or roosting shorebirds. Impacts of commercial tours, guides, and outfitters are likely to be minimal if conducted in accordance with refuge regulations. The refuge will manage refuge closures that restrict pedestrian access to minimize disturbance to priority avian species during critical times of the year. Closures can be expanded or decreased as needed, depending on bird activity and results of further disturbance studies. The refuge is a leave-no-trace, carry-in-carry-out facility. We encourage all outfitters and guides to pack in and pack out all food containers, bottles, wrappers, trash, and other waste and refuse. Littering, dumping, and abandoning property are prohibited by Federal regulation at 50 C.F.R. 27.93.94.

Foot travel for commercial tours, guides, and outfitting group trips occurs on old beach buggy trails, deer trails, and around designated closed areas for the purpose of studying plant or animal life. Trampling of some vegetation is likely.

Unmanaged hiking or walking has the potential to damage or kill plants and lead to new, unwanted, impromptu trails on the refuge that become shortcuts through more ecologically sensitive sites. Heavy use of designated, managed, or unmanaged pedestrian travel routes can ultimately lead to areas devoid of vegetation (McDonnell 1981, Vaske et al 1992) and potentially destabilize dunes and interdunal wetlands, which are difficult to stabilize and restore to a naturally functioning condition (Kucinski and Einsenmenger 1943, Cole 2002, Goldsmith 2002, Grady 2002, O'Connell 2008).

Trampling has three initial effects: abrasion of vegetation, abrasion of surface soil organic layers, and soil compaction (Cole 2002). Plants can be crushed, sheared off, bruised, and even uprooted by trampling, leading to reduced vigor and reproduction, reduced or altered plant species composition and structure, and reduced biomass and cover (Cole 2002). Of these, abrasion of vegetation is the most common and noticeable effect observed in coastal dune communities, where little or no surface organic layer exists on the sandy soil substrate that naturally resists compaction (Fletcher 1993). All three impacts can commonly occur, however, within coastal marsh habitats where reduced wave energy allows significant accumulation of surface organic layers that are vulnerable to compaction (Fletcher 1993), which increases surface soil bulk density and reduces permeability. Increased ponding and muddy conditions tend to promote wider vegetative and soil impact zones along trails through wet areas (Cole 2002). McDonnell (1981) analyzed long-term human trampling, ranging from low to high intensity, on coastal dune vegetation at Parker River National Wildlife Refuge in Massachusetts. All levels of trampling significantly lowered species diversity, and heavy trampling caused a drastic reduction in species diversity and total vegetation cover. Moderate trampling reduced species diversity but not cover. This was probably because moderate trampling favored some species, such as beach grass, over other, more sensitive species, such as beach-heather (*Hudsonia tomentosa*). Trampling may result in changes in plant communities by preventing succession in interdune and backdune areas and favoring disturbance-tolerant foredune species like beach grass.

The harsh growing conditions and environment in the coastal barrier system can make for slow vegetative recovery even after pedestrian traffic is eliminated at trampled sites (Fletcher 1993). The gradient from no vegetation to normal cover levels is very narrow along refuge trails and other footpaths where trampling is more concentrated, and is wider at traditional boat landings where trampling is more dispersed. Hiking and walking are among the most primitive forms of recreation, and the trails themselves encourage users to confine their hiking or walking to narrow corridors radiating or looping outward from user focal areas such as beach access points or boat landings. Localized impacts concentrated near a small number of the most popular destinations do not pose any serious disruption to the barrier ecosystem composition, structure, and function, and are not evident at large spatial scales on Monomoy NWR.

Once established, the trails themselves are clear evidence of human presence that detracts from some users' perceptions of an otherwise untrammelled, undeveloped, or natural appearing landscape (Hendee and Dawson 2002) within the Monomoy Wilderness. Bare, exposed sand (dune areas) and potentially compacted (tidal marsh segments) trail treads and narrow zones of disturbed vegetation on either side of refuge foot trails and boat landings will be readily evident, but when trail standards are kept minimal, trails tend to be accepted or even expected by most, though not all, wilderness users (Stankey and Schreyer 1987, Cole 2002, Hendee and Dawson 2002). The majority of the Monomoy Wilderness will remain essentially unvisited and virtually undisturbed by hiking and walking. Pedestrian footpaths are not expected to substantially compromise the perception of naturalness of the Monomoy Wilderness landscape or the wilderness user's experience (Cole 2002, Hendee and Dawson 2002).

Wilderness visitors' experiences are most strongly affected by social conditions, such as other visitors and their actions, than by their perception of naturalness or ecological conditions (Hendee and Dawson 2002). Although hiking and walking are among the most primitive forms of recreation, the trails themselves tend toward promoting a confining rather than an unconfined user experience (Hendee and Dawson 2002). With typically long sight distances across Monomoy's rolling nearly treeless coastal barrier landscape, too many individuals encountered or observed hiking or walking during visits by other Monomoy Wilderness users likely detracts from the sense of solitude experienced by wilderness users (Stankey and Schreyer 1987, Hendee and Dawson 2002). However, hiking and walking use is still currently very light in the more remote, interior portions of South Monomoy open to public use, where outstanding opportunities for solitude and unconfined, primitive, outdoor recreation can be experienced by other Monomoy Wilderness users.

Vegetation trampling and soil compaction impacts are a direct function of group size, which can be managed through permit or concession contract requirements. Participant safety and potential for excessive disturbance to disturbance-sensitive wildlife species also becomes more difficult for group leaders to control as the group size increases per guide or leader. The number and type of encounters by wilderness users with other users, which in part determines wilderness experience quality and solitude, also increases with increasing group size and as commercial tours, guides, and outfits gain popularity. The numbers of tours offered annually will be reviewed, evaluated, and restricted if necessary. At this time, the frequency of guided tours does not adversely impact the wilderness character of the Monomoy Wilderness.

Individuals hiking on South Monomoy could potentially impact the larval stage of the threatened northeastern beach tiger beetle. The recovery plan for this species describes that many of the species' habitats are threatened by human impacts such as habitat alteration and recreational activities (USFWS 1994). Larval burrows are especially susceptible to trampling, which results in excess energy expenditure and reduced hunting time for the inhabiting individual. We will continue to survey to determine the location and extent of larval beetle occurrence and habitat, and use closures and re-route trails to avoid larval habitats.

Pedestrian use also has the potential to disturb loafing seals. Gray and harbor seals haul out on the refuge year-round. We will enforce the 150-foot buffer around all seals as required by the National Oceanic Atmospheric Administration to ensure compliance with the Marine Mammals Protection Act.

### *Ferry Service*

The approach of a ferry, typically a 20- to 25-foot boat with an outboard engine, to pick up and discharge passengers creates a temporary disturbance to migratory birds feeding or loafing on the beach nearby. Ferry boat landing sites are designated outside of areas used heavily by nesting, feeding, and roosting terns, shorebirds, and colonial waterbirds. Any energy expended by migratory birds to avoid disturbance associated with beaching a ferry and loading and unloading passengers is negligible.

North and South Monomoy make up the Monomoy Wilderness. The untrammelled environment and solitude of the Monomoy Wilderness, accessible only by boat or lengthy hike along the barrier beach, make it unique among the protected areas on Cape Cod. Motorized boats operated by tour, ferry, charter guides, or outfitters approach and depart the designated shoreline landing sites through the shallows very slowly, which has the added effect of reducing engine noise and boat wake. Monomoy has an unusually low absorption capacity for human impacts. Lack of topographic relief and low vegetation mean that intrusions, including seeing and hearing other people, are often observable from a long distance. Providing visitors with a convenient way to get out to the islands may result in a diminished degree of solitude for some wilderness users, but should not adversely affect the overall wilderness character of the Monomoy Wilderness. There should be a negligible impact to fisheries as a result of commercial guiding and the fish they are harvesting.

## **PUBLIC REVIEW AND COMMENT:**

As part of the comprehensive conservation planning (CCP) process for the Monomoy National Wildlife Refuge, this compatibility determination will undergo a 60-day public comment period concurrent with the release of our draft CCP/Environmental Impact Statement.

**DETERMINATION (CHECK ONE BELOW):**

- Use is not compatible
- Use is compatible, with the following stipulations

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

- A fee greater than or equal to \$250 will ordinarily be charged for special use permits, but may be fully or partially waived by the refuge manager. Concession contract fees will be the greater of a fixed franchise fee greater than or equal to \$5,000 per year, or a percent of gross receipts greater than or equal to 5 percent and less than or equal to 20 percent.
- All hiking or walking will be done only in areas that are open to the public. Several beaches and interior areas on the Monomoy Islands are seasonally closed to all public use to prevent disturbance to nesting and migrating birds. Areas that are open to this use will be evaluated on an annual, seasonal, and sometimes daily basis and will be influenced by beach geomorphology and wildlife use. Seasonal closures will vary year to year based on wildlife use and habitat conditions. Visitors will be expected to comply with closures. Updates on closures will be available at the Monomoy Headquarters and on the refuge Web site. Ferry operators will inform unguided ferry passengers of closed areas before they are left on their own to explore the island.
- Tour, ferry, and guide boat operators will use only designated boat landing sites.
- Ferries will not operate at night or in dense fog conditions (¼-mile visibility or less) when a visitor could easily become disoriented and unknowingly violate a posted closed area. Regulations to ensure the safety of all participants will be included with permits or concession contracts; specific conditions that may apply to the requested activity will be addressed through the special use permit or concession contract.
- All pedestrians must maintain a 150-foot buffer around all seals as required by the National Oceanic Atmospheric Administration to ensure compliance with the Marine Mammals Protection Act. Boat operators will adhere to the Northeast Seal Watching Guidelines and other NOAA marine mammal viewing guidelines.
- Groups may be scheduled so as to avoid time or space conflicts with critical wildlife activities and each other. Currently, there is no restriction on the number of tour groups or visitors allowed on Monomoy at any one time. Refuge staff monitor public use and document any associated serious impacts.
- Refuge visitor information services and products will emphasize the importance of staying on trails and out of areas that are seasonally closed, along with providing “leave no trace” principles, practices and hiking tips. No physical items, including litter, will be placed or left on the refuge. No items will be removed from the refuge. Take only photos, leave only footprints.
- Refuge staff or volunteers will periodically qualitatively and photographically document pedestrian impacts to vegetation and soils to footpaths, boat landings, and other known user concentration points for use in drafting or updating a Monomoy Wilderness Stewardship Plan. If public use causes unacceptable environmental degradation or wildlife disturbance, we will implement appropriate limits on visitor numbers and tours.
- Tour routes will be monitored for impacts on wildlife or habitat and will be rerouted. Closed areas for wildlife sensitive to disturbance will be clearly posted, and tour group leaders will be provided with maps of the closures and refuge regulations.
- All activities conducted in wilderness will be subject to a minimum requirements analysis (see part II of appendix E, Wilderness Review)

**JUSTIFICATION:**

Natural and cultural history activities and the ferry service that supports these activities generally support refuge purposes. The minor resource impacts attributed to these activities are generally outweighed by the benefits gained by educating present and future generations about refuge resources. Guided natural history tours are a public use management tool intended to develop a resource protection ethic within society. This tool allows us to educate refuge visitors about endangered and threatened species management, wildlife management, ecological principles, and communities. A secondary benefit of this use is that it instills a sense of ownership or stewardship in visitors, which helps reduce vandalism, littering, and poaching; it also strengthens Service visibility in the local community. Cultural history activities allow visitors to learn about the artifacts left in an area and also gain an appreciation for the lands involved and the refuge purpose. In addition, by allowing educational tours to occur on the islands, the Service is able to fulfill its obligation to maintain the Monomoy Point Light Station.

Issuing special use permits and concession permits for commercial guiding and outfitting does not significantly impact biological resources for which the refuge was established and requires no additional facilities. The administrative requirement is minimal. This activity has a positive effect on the overall interpretive, environmental education, and wildlife observation programs of the refuge, reaching a much larger audience. It would also produce a greater appreciation of wildlife resources in participants, and building relationships between the refuge and area businesses.

We do not expect pedestrian access to materially interfere with or detract from the mission of the National Wildlife Refuge System, nor diminish the purpose for which the refuge was established. It will not pose significant adverse effects on refuge resources, interfere with public use of the refuge, or cause an undue administrative burden. These uses would contribute to achieving refuge purposes and the Refuge System mission because they facilitate wildlife observation and photography and provide compatible recreational opportunities for visitors to observe and learn about wildlife and habitats firsthand.

Shifting channels, bars, and shoals, and strong ocean currents make boat travel between the Monomoy Islands and the mainland a challenge for even the most experienced mariner. Commercial ferries provide a safe alternative for visitors to explore beyond the mainland portion of the refuge. Visits to the islands occur during daylight hours only, particularly midday when migratory bird activity is diminished, and ferry service is offered May through September only. This activity as conducted on Monomoy NWR does not adversely affect the purposes for which this refuge was established.

**SIGNATURE:**

Refuge Manager: \_\_\_\_\_  
(Signature) (Date)

**CONCURRENCE:**

Regional Chief: \_\_\_\_\_  
(Signature) (Date)

**MANDATORY 10 YEAR RE-EVALUATION DATE:**

\_\_\_\_\_

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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Commercial Wildlife and Landscape Filming and Photography

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Commercial Wildlife and Landscape Filming and Photography

**NARRATIVE:**

Although commercial filming and photography is not a priority public use, it supports the wildlife photography and interpretation priority, wildlife-dependent, public uses identified by the 1997 Refuge Improvement Act. Limited commercial photography will support the mission of the National Wildlife Refuge System by promoting an understanding and appreciation of natural and cultural resources and their management within a national system of refuges. Commercial filming and photography will reach many segments of the public to expand support for the refuge system, including those who may never actually be able to visit the refuge. Individual refuge programs will be consistent with, and fully support, the goals and objectives in the Monomoy NWR Comprehensive Conservation Plan.

Service Wilderness policy generally prohibits commercial photography in wilderness areas unless we determine it is necessary to provide educational information about wilderness uses and values and does not degrade the wilderness character of the area. In cases where we allow such photography as a commercial service, we first evaluate it for appropriateness and compatibility, and we manage the use through an audiovisual productions permit. At the Monomoy NWR due to its vastness and difficulty for the general public to access the more remote sections of the refuge, limited commercial filming and photography access will directly support the interpretation and education of the resources managed on the refuge as well as promoting wilderness character.

We do not expect limited commercial photographer access to materially interfere with or detract from the mission of the National Wildlife Refuge System, nor diminish the purpose for which the refuge was established. It will not pose significant adverse effects on refuge resources, interfere with public use of the refuge, or cause an undue administrative burden.

Commercial filming and photography will have little to no affect on wilderness character when conducted in accordance to wilderness requirements, such as no motorized equipment or mechanical transport. This activity does not alter the natural, scenic condition of the land and will not occur at a scale large enough to diminish the environment for native plants and animals. The most probable wilderness impact will be to other visitors whose solitude could be impacted by commercial photographers.

For these reasons, commercial wildlife and landscape filming and photography, both still and motion, are appropriate uses on Monomoy NWR.

## COMPATIBILITY DETERMINATION

### **USE:**

Commercial Wildlife and Landscape Filming and Photography

### **REFUGE NAME:**

Monomoy National Wildlife Refuge

### **DATE ESTABLISHED:**

June 1, 1944

### **ESTABLISHING AND ACQUISITION AUTHORITY(IES):**

Migratory Bird Conservation Act (16 U.S.C. § 715d) Public Law 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. § 715d).

“...wilderness areas...shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness. (PL 88-577 § 2(a), Wilderness Act; as referenced in P.L. 91-504 § 1(g), An Act to Designate Certain Lands as Wilderness).

### **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 the use a priority public use?**

The use is commercial photography, filming (including videography), and audio recording (collectively called “recording” for the purposes of this compatibility determination). This use has occurred in the past and future requests are expected to remain steady or increase slightly. The use typically involves filming scenes for a movie, television show, public education program or commercial, taking still photographs, or recording natural sounds for commercial purposes. The primary focus of the production at times may or may not be wildlife-related or educational in nature. In the latter instance, the refuge may be used as a natural background for the production. The final creation would be produced for sale as a commercial product. The refuge is a popular location for recording for multiple purposes as it’s one of the most pristine natural areas on the Atlantic coast, yet close in proximity to Boston, a major media center. This use is regulated by Refuge Manual (RM) Part 8, Chapter 16 and the Code of Federal Regulations (CFR), Title 43, Subtitle A, Section 5.1. This is not a priority

public use (National Wildlife Refuge System Improvement Act of 1997; Public Law 105-57); however, it may support and enhance the priority public use of wildlife photography. The recordings produced may also support the priority public uses of environmental education and interpretation.

**(b) Where would the use be conducted?**

This use will occur in areas of the refuge specified in the special use permit. The use will generally take place in areas that are open to visitors including Morris Island Trail, and seasonally allowable access areas on North and South Monomoy and Minimoy. Visitors engaged in commercial photography will be required to use temporary or portable blinds to minimize disturbance to wildlife and to ensure wilderness character is not impacted.

**(c) When would the use be conducted?**

The use may occur during daylight hours during the year, unless otherwise specified in special use permit.

**(d) How would the use be conducted?**

Commercial filming will be managed on the refuge through the special use permit process to minimize the possibility of damage to cultural or natural resources or interference with other visitors to the area. Requests must be submitted in writing to the refuge manager no less than 60 days prior to the requested date(s). Each request will be reviewed on a case-by-case basis and will require a special use permit. There is a fee for issuance of commercial photography special use permits; the fee is adjusted on a case-by-case basis depending on the specific details of each permit.

**(e) Why is this use being proposed?**

Monomoy National Wildlife Refuge and its designated wilderness is an incredibly scenic and beautiful landscape with tremendous opportunities for commercial filming and commercial still photography. The refuge provides an ideal setting for filmmakers and photographers. Each year the refuge staff receives requests to conduct commercial filming or commercial still photography on the refuge. Each request is evaluated on an individual basis, using a number of Department of the Interior, U.S. Fish and Wildlife Service, and National Wildlife Refuge System policies (for example, 43 CFR Part 5, 50 CFR Part 7, 8 RM 16). In addition, much of the refuge is designated wilderness area. A minimum-requirements decision guide will be completed for all commercial filming activities proposed in Monomoy Wilderness. This process involves determining if an essential task should be conducted in the wilderness area, and then determining the combination of methods, equipment, or administrative practices necessary to successfully and safely administer the refuge and accomplish wilderness management objectives. The use includes access by groups or individuals to areas open to the general public. In rare cases, access to areas closed to the general public may be permitted through the special use permit process. These activities will contribute to enhancing awareness of conservation and recreational opportunities at the refuge.

**AVAILABILITY OF RESOURCES:**

In general, the refuge will normally incur no expense except administrative costs for review of applications, issuance of a special use permit, and staff time to conduct compliance checks. Commercial filming and photography would need to be managed in coordination with the existing staff, which is anticipated to be sufficient for the expected permitting workload.

**Recurring annual costs:**

GS-11 Visitor Services Manager	1 staff	40 hours	\$1,800
GS-9 Visitor Services Specialist	1 staff	20 hours	\$ 750
GS-11 Law Enforcement	1 staff	10 hours	\$ 450
<b>Total recurring annual costs:</b>			<b>\$3,000</b>

## **ANTICIPATED IMPACTS OF THE USE:**

Public uses, such as commercial photography, can produce short-term, negative, direct or indirect impacts on wildlife or habitats. However, we believe the long-term benefits from the conservation nature of the products could be greater. Projects will be conducted at the appropriate time of year and conditions to minimize disturbances and incorporate other best management practices.

The majority of the impact from commercial photography will be disturbance caused to resting, feeding, or nesting migratory birds and resting seals or the handling of horseshoe crabs in the waters off Morris Island. There will be some trampling of vegetation. On Morris Island, with use restricted to designated trails and other refuge structures, we predict the impacts will be confined to small areas and in areas already affected.

Service Wilderness policy generally prohibits commercial photography in wilderness areas unless we determine it is necessary to provide educational information about wilderness uses and values and does not degrade the wilderness character of the area. In cases where we allow such photography as a commercial service, we first evaluate it for appropriateness and compatibility, and we manage the use through an audiovisual productions permit. At the Monomoy NWR due to its vastness and difficulty for the general public to access the more remote sections of the refuge, limited commercial filming and photography access will directly support the interpretation and education of the resources managed on the refuge as well as promoting wilderness character.

Permittees may be authorized to utilize new structures located outside the Monomoy Wilderness. These structures will be located to minimize the long-term consequences and cumulative impacts to wildlife and habitats. Most of the new structures proposed, e.g., kiosks, observation platforms, photography blinds, would each result in habitat losses of less than  $\frac{1}{4}$  acre.

Permittees engaged in commercial filming and photography have a vested interest in minimizing disturbance to the wildlife they wish to observe and photograph. However, photographers are known to disturb wildlife in an attempt to get closer looks or higher quality images of their subjects. Any special use permits issued by the refuge manager will clearly state the parameters of access and, if these conditions are found to be violated, the permit will be immediately voided and the permittee denied any future permits. On North Monomoy Island and South Monomoy in particular, pedestrians have the potential of impacting shorebird, waterfowl, and other migratory bird populations feeding and resting on beaches and tidal flats. Pedestrians can also impact seals resting on the beach if they get too close. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). Response of wildlife to human activities includes departure from site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschgen et al. 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschgen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990).

Numerous studies have documented that migratory birds are disturbed by human activity on beaches. Erwin (1989) documented disturbance of common terns and skimmers and recommended that human activity be restricted to a distance of 100 meters around nesting sites. In studying waterbird response to human disturbance, Klein (1993) found that, as intensity of disturbance increased, avoidance response by the birds increased, and found out-of-vehicle activity to be more disruptive than vehicular traffic. Pfister et al. (1992) found the impact of disturbance was greater on species using the heavily disturbed front side of the beach, with the abundance of the impacted species being reduced by as much as 50 percent. In studying the effects of recreational use of shorelines on nesting birds, Robertson et al. (1980) discovered that disturbance negatively impacted species composition. Piping plovers, which intensively use the refuge, are also impacted negatively by human activity. Pedestrians on beaches may crush eggs (Burger 1987, Hill 1988, Shaffer and Laporte 1992, Cape Cod National Seashore 1993, Collazo et al. 1994). Dogs may chase plovers (McConnaughey et al. 1990), destroy nests (Hoopes et al. 1992), and kill chicks (Cairns and McLaren 1980). Other studies have shown that if pedestrians cause incubating plovers to leave their nest, the eggs can overheat (Bergstrom 1991) or can cool to the point of embryo death (Welty 1982). Pedestrians have been found to displace unfledged chicks (Strauss 1990, Burger 1991, Hoopes et al. 1992, Loegering 1992, Goldin 1993).

Several studies have examined the effects on birds of recreation using shallow water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981, 1986, Klein 1993, Burger et al. 1995, Klein et al. 1995, Rodgers and Smith 1995, 1997, Burger and Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreation activities always has at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986, Klein 1993, Burger et al. 1995, Klein et al. 1995, Rodgers and Smith 1997, Burger and Gochfeld 1998). The findings reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

**Presence:** Birds avoided places where people were present and when visitor activity was high (Burger 1981, Klein et al. 1995, Burger and Gochfeld 1998).

**Distance:** Disturbance increased with decreased distance between visitors and birds (Burger 1986), though exact measurements were not reported.

**Approach Angle:** Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger and Gochfeld 1981, Burger et al. 1995, Knight and Cole 1995, Rodgers and Smith 1995, 1997).

**Type and Speed of Activity:** Joggers and landscapers caused birds to flush more than fishermen, clammers, sunbathers, and some pedestrians, possibly because the former groups move quickly (joggers) or create more noise (landscapers). The latter groups tend to move more slowly or stay in one place for longer periods, and birds likely perceive these activities as less threatening (Burger 1981, 1986, Burger et al. 1995, Knight and Cole 1995). Alternatively, birds may tolerate passing by with unabated speed, but may flush if the activity stops or slows (Burger et al. 1995).

**Noise:** Noise caused by visitors resulted in increased levels of disturbance (Burger 1986, Klein 1993, Burger and Gochfeld 1998), though noise was not correlated with visitor group size (Burger and Gochfeld 1998).

The proposed use has the potential of intermittently interrupting the feeding habits of a variety of shorebirds, gulls, and terns, but encounters between pedestrians and migratory birds will be temporary. Refuge staff will manage public and permittee access via seasonal closures to minimize disturbance to nesting, resting, and foraging waterbirds on the refuge.

Permit holders could potentially impact the larval stage of the threatened northeastern beach tiger beetle. The recovery plan for this species describes that many of the species' habitats are threatened by human impacts such as habitat alteration and recreational activities (USFWS 1994). Larval burrows are especially susceptible to trampling; for the inhabiting individual, this results in excess energy expenditure and reduced time hunting.

Commercial filming and photography also has the potential to disturb loafing seals. Gray and harbor seals haul out on the refuge year-round. A 150-foot buffer around all seals is required by the National Oceanic Atmospheric Administration to ensure compliance with the Marine Mammals Protection Act.

All of North Monomoy Island and most of South Monomoy are designated wilderness and are part of the National Wilderness Preservation System. Wilderness, in contrast to those areas where humans and their works dominate the landscape, is an area where the Earth and its community of life are untrammled by humans, where humans visitors do not remain. Preserving wilderness character requires that we maintain both the tangible and intangible aspects of wilderness. Aspects of wilderness character include maintaining the natural, scenic condition of the land; providing environments for native plants and animals, including those threatened or endangered; maintaining watersheds and airsheds in a healthy condition; maintaining natural night skies and soundscapes; retaining the primeval character of and influence on the land; serving as a benchmark for ecological studies; and providing opportunities for solitude, or primitive and unconfined outdoor recreation, for risk, adventure, education, personal growth experiences, a sense of connection with nature and values beyond one's self, a link to our American cultural heritage, and mental and spiritual restoration in the absence of urban pressures. We provide opportunities for appropriate and compatible use and enjoyment of wilderness areas in a manner that will preserve their wilderness character and "leave them unimpaired for future use and enjoyment as wilderness."

Commercial filming and photography will have little to no affect on wilderness character. This activity does not alter the natural, scenic condition of the land and will not occur at a scale large enough to diminish the environment for native plants and animals. The most likely wilderness impact will be to other visitors who may be momentarily disturbed when witnessing professional photography use occurring. Since the refuge will be utilizing a special use permit process for all commercial filming and photography, the manager may revoke or deny any permits or applications if there is any question on disturbance to wildlife or if a permittee violates permit stipulations.

**PUBLIC REVIEW AND COMMENT:**

As part of the comprehensive conservation planning (CCP) process for the Monomoy National Wildlife Refuge, this compatibility determination will undergo a 60-day public comment period concurrent with the release of our draft CCP/Environmental Impact Statement.

**DETERMINATION (CHECK ONE BELOW):**

Use is not compatible

Use is compatible with the following stipulations

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

Stipulations are listed as “Special Conditions” in the SUP.

Commercial filming and photography is administered through a SUP issued on a case-by-case basis. A fee will be charged and must be paid before the SUP will be issued. Prior to issuing a special use permit, the refuge manager is required to submit an audiovisual production permit request through the Service’s regional office.

Sites for photo shoots will be submitted in advance and approved by the refuge manager.

All permit holders must follow refuge regulations.

All activities must comply with 8 RM 16 and 43 CFR, Subtitle A, Section 5.1 and may require completion of a Commercial Audio-Visual Production Application and posting of a bond.

A minimum-requirements decision guide will be completed for all commercial filming activities proposed in Monomoy Wilderness. This minimum requirements process involves determining if the activity can only be conducted in wilderness, and then to determine the combination of methods, equipment, or administrative practices that representing the minimum necessary to preserve wilderness character and safely administer the refuge.

Prior to recording, the permittee will provide the refuge manager with a copy of their current liability insurance policy. The refuge must be named as an additional insured on the policy for the duration of the production.

Permittee must have the SUP in their possession at all times while on the refuge. A copy of the permit must also be prominently displayed on the dash of permittee’s vehicle(s) at all times while on the refuge. The permit must be presented to refuge officials upon request.

The permit is not transferable.

Access to the refuge in areas and at times not permitted to the general public may be granted in the SUP depending upon the needs of the production, the availability of suitable location(s), and refuge operations and resources. All areas and times not specifically permitted are off-limits for recording. Permittees must follow

the conditions outlined in the permit, which normally includes notification of refuge personnel each time any activity occurs in closed areas. Use of a closed area will be heavily restricted to reduce disturbance to wildlife.

Blinds will be required for all areas that are not open to the public.

No sound-making or lighting devices will be permitted.

Only commercial filming and photography in support of conservation, refuge purposes, the National Wildlife Refuge System Mission, or for educational and interpretive purposes will be permitted.

A special use permit will be required upon approval of an audiovisual permit from the refuge's regional office per Service policy.

All commercial filming and photography activities will avoid sensitive areas prone to disturbance (e.g., sensitive vegetation areas) or degradation (e.g., soil compaction), and will be designed to minimize impacts to nesting birds or other breeding, feeding, or resting wildlife. Areas that are open to this use will be evaluated on an annual, seasonal, and sometimes daily basis and will be influenced by beach geomorphology and wildlife use. Seasonal closures could extend from March 15 to October 30, but will vary year to year based on wildlife use and habitat conditions.

Access for commercial filming and photography activities will be on foot or by ferry, boats, or paddling. No motorized equipment or mechanized transport will be allowed in the refuge's wilderness areas.

Activities will be held on designated sites where only minimal direct and short-term impacts are predicted.

Periodic evaluations will be done to insure that visitors are not causing unacceptable adverse impacts. If evidence of unacceptable impacts occur, access would be modified or curtailed as deemed necessary by the refuge manager.

Occasional law enforcement patrol and regular staff presence should minimize potential violations. The refuge is open ½ hour before sunrise to ½ hour after sunset for wildlife photography. These restrictions will be maintained, unless otherwise specified in permit. Refuge regulations will be posted and enforced.

The refuge is a leave-no-trace, carry in-carry out facility. All food containers, bottles, and other waste and refuse must be taken out. Littering, dumping, and abandoning property are prohibited by Federal regulation at 50 C.F.R. 27.93.94.

## **JUSTIFICATION:**

Although commercial filming and photography is not a priority public use, it supports the wildlife photography and interpretation priority, wildlife-dependent public uses identified by the 1997 Refuge Improvement Act. Limited commercial photography will support the mission of the National Wildlife Refuge System by promoting an understanding and appreciation of natural and cultural resources and their management within a national system of refuges. Commercial photography will reach many segments of the public to expand support for the refuge system, including those who may never actually be able to visit the refuge. Individual refuge programs will be consistent with, and fully support, the goals and objectives in the Monomoy NWR Comprehensive Conservation Plan.

We do not expect commercial filming and photography access to materially interfere with or detract from the mission of the National Wildlife Refuge System, nor diminish the purpose for which the refuge was established. It will not pose significant adverse effects on refuge resources, interfere with public use of the refuge, or cause an undue administrative burden. These uses would contribute to achieving refuge purposes and the Refuge System mission because they facilitate wildlife photography and interpretation and promote compatible recreational opportunities for visitors to observe and learn about wildlife and habitats firsthand and secondhand.



This program as described is determined to be compatible. Any potential negative impacts of commercial wildlife and nature photography activities on refuge resources will be minimized by the restrictions included in the conditions of the special use permit. In addition, the activities associated with commercial photography will be regulated and monitored by refuge staff.

The Service permits commercial filming and photography where it would further outreach, education, or public understanding of the natural environment, refuge resources and management, or the Refuge System and Service's missions. No approvals for a permit would occur until the refuge manager can insure those benefits would result.

As such, all approved commercial wildlife and nature filming and photography will contribute to the goals of the refuge and Refuge System, and 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 10 YEAR RE-EVALUATION DATE:**

\_\_\_\_\_

**LITERATURE CITED:**

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## COMPATIBILITY DETERMINATION

### **USE:**

Environmental Education and Interpretation

### **REFUGE NAME:**

Monomoy National Wildlife Refuge

### **DATE ESTABLISHED:**

June 1, 1944

### **ESTABLISHING AND ACQUISITION AUTHORITY(IES):**

Migratory Bird Conservation Act (16 U.S.C. § 715d) Public Law 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. § 715d).

“...wilderness areas...shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness. (PL 88-577 § 2(a), Wilderness Act; as referenced in P.L. 91-504 § 1(g), An Act to Designate Certain Lands as Wilderness).

### **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 the use a priority public use?**

Environmental education and interpretation are priority public uses of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee) and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). Both environmental education and interpretation activities seek to increase public knowledge and understanding of fish and wildlife resources and the value of habitat protection and management in protecting and conserving these resources. Environmental education is curriculum-based and typically includes teacher or staff-guided onsite field trips, offsite programs in classrooms, and nature study such as teacher and student workshops. Interpretation consists of guided natural or cultural history programs, special events such as the Chatham Fourth of July

parade, interpretative signs, self-guided nature trails, lectures, and kiosks that serve as a source of information for refuge visitors. Interpretation includes developing and publishing brochures, managing a refuge Web site, using social media such as Facebook and Twitter, and installing information signs. Interpretation occurs both onsite and offsite.

**(b) Where would the use be conducted?**

The majority of this use will be conducted on the Morris Island part of Monomoy NWR and offsite in classrooms and local community facilities. Brochures and informational signs could be placed offsite within the Town of Chatham, at Cape Cod National Seashore, or at other locations accessible to local residents or potential refuge visitors. Both uses can occur in any area open to the public, although permanent structures are generally not allowed in wilderness areas, so no interpretative panels and only minor information signs will be located in the Monomoy Wilderness. Certain areas on Monomoy NWR are seasonally closed to public access at the refuge manager's discretion to protect sensitive habitats or species of concern, minimize conflicts with other refuge activities, or respond to human health and safety concerns. All environmental education and interpretation activities will avoid sensitive areas prone to disturbance (e.g., sensitive vegetation areas) or degradation (e.g., soil compaction), and will be designed to minimize impacts to nesting birds or other breeding, feeding, or resting wildlife.

Refuge environmental education and interpretation will primarily occur on Morris Island, generally on the shoreline and beach, within 50 meters of existing trails, and at other facilities such as the refuge headquarters and visitor contact station and viewing platforms. Self-guided interpretation could occur in the Monomoy Wilderness, as could interpretative tours. Due to logistical constraints, fewer environmental education opportunities will occur on North Monomoy Island or South Monomoy.

We will provide interpretation of habitat and wildlife values at the Morris Island Trail trailhead kiosks and along the trail. We will continue to maintain a seasonally staffed refuge visitor contact station at the existing headquarters until a new off-refuge visitor contact station can be established. Additional off-site locations for providing brochures or interpretative panels could be established in conjunction with partners or local businesses. Some possible locations for delivering interpretive information could include the Morris Island Road causeway overflow parking, other visitor satellite parking lots and transit stops, the Marconi Maritime Museum, local boat ramps and marinas, the Chatham Fish Pier, Cape Cod Rail Trail parking lots, Chatham Bars Inn and Resort, Cape Cod Natural History Museum, Wellfleet Bay Sanctuary, Cape Cod National Seashore's Salt Pond Visitor Center, and the Lighthouse Beach overlook.

**(c) When would the use be conducted?**

Environmental education will occur year-round during daylight hours when the refuge is open; however, most of the field programs would be associated with the fall and spring school terms.

Interpretive activities will be conducted year-round, primarily during daylight hours when the refuge is open. Occasional staff-led or volunteer-led night programs would occur during the year. Interpretive activities would increase during the summer months, when the refuge receives peak visitation and has summer interns.

**(d) How would the use be conducted?**

Refuge staff, local teachers, volunteers, and conservation partners will conduct environmental education and interpretation on and off the refuge. Most curriculum-based environmental education programs at Monomoy NWR are conducted by others, such as the Friends of Monomoy, Massachusetts Audubon Society, Cape Cod Natural History Museum, and local school districts, primarily at Morris Island. Teacher-led school group trips also occur on the refuge with several of the teacher-leaders already serving as refuge volunteers. Onsite refuge activities will primarily include teacher-led or staff-guided field trips exploring topics requested by teachers, teach-the-teacher workshops, or more structured curriculum-based programs specifically designed for use on the refuges. Students will learn about nature from designated refuge trails, viewing platforms on Morris Island, and in the Monomoy Wilderness. Environmental education activities could utilize interpretive infrastructure such as kiosks, sign panels, and displays in the visitor contact station.

Interpretation activities on Monomoy NWR will be both self-guided and staff-led or volunteer-led. Interpretive information will be delivered through kiosks at refuge trailheads, refuge trail guides, brochures, interpretive panels at observation platforms and self-guided tour stops on trails, and interpretive displays in the refuge

visitor contact station and at local community special events. Staff-led and volunteer-led programs would, over time, become more diverse and allow for more interaction with visitors. A significant amount of interpretive information will also be available through the Internet.

Offsite activities will primarily include offering refuge staff assistance to local partners who are interested in working with the Service to expand our efforts into local classrooms and the occasional refuge attendance at special events, such as a career day.

Environmental education and guided interpretation conducted in the wilderness area on North and South Monomoy can provide information about the Monomoy Wilderness to ensure activities are conducted appropriately and raise awareness about the National Wilderness Preservation System. We will conduct a minimum requirements analysis for proposed environmental education and interpretation activities held within the Monomoy Wilderness. Access for environmental education and interpretation activities would be on foot, or by boat or kayak. Motorized equipment is not allowed within the Monomoy Wilderness, which includes the majority of the lands comprising the refuge.

**(e) Why is this use being proposed?**

The 1997 Refuge Improvement Act states that priority, wildlife-dependent public uses should receive enhanced consideration in planning and be facilitated on refuges to the extent they are compatible.

Environmental education and interpretation promotes public understanding and appreciation of the National Wildlife Refuge System, the National Wilderness Preservation System, and the Monomoy refuge. The migratory birds, threatened and endangered species, other Service trust resources and habitats on which they depend, and wilderness values within the Monomoy Wilderness will benefit from Service efforts to cooperate with environmental education partners to educate the public on the impacts to native salt marsh and dune vegetation and harmful wildlife disturbance from inappropriate public uses.

**AVAILABILITY OF RESOURCES:**

Environmental education and interpretation are currently provided on a small scale by existing refuge staff. The refuge manager and two biological staff each dedicate approximately 0.2 FTE to these public use programs. For the environmental education and interpretation to be more fully realized, additional visitor services staff would be needed to plan, implement, and monitor the public use programs on Monomoy NWR, including administration of the refuge visitor contact station. New and recurring costs to conduct an environmental education and interpretation program are presented below.

**New construction and renovation estimated costs:**

Construct and install two new kiosks on Morris Island	\$6,000
Construct and install one new accessible platform on Morris Island	\$15,000
Construct and install one new photography blind on Morris Island	\$ 3,000
Renovate Morris Island trail for handicapped accessibility	\$100,000
Renovate exhibits in existing visitor contact station	\$250,000
Renovate or construct new off-site visitor contact station	<u>\$250,000 to \$5,000,000</u>
<b>Total new costs:</b>	<b>\$374,000 to \$5,124,000</b>

**Recurring annual costs:**

GS-9 Visitor Services Specialist	1 staff	200 hours	\$7,500
GS-11 Law Enforcement	1 staff	40 hours	\$2,000
GS-9 Law Enforcement	1 staff	100 hours	\$4,500
Ferry service to islands and bus transportation to refuge			\$5,000
Regular maintenance of visitor centers			\$25,000
Regular maintenance of kiosks, platforms, photo blinds, trails, public restrooms			\$15,000
Equipment, vehicles, and supplies (including brochures/trail guides)			<u>\$22,000</u>
<b>Total recurring annual costs:</b>			<b>\$81,000</b>

## **ANTICIPATED IMPACTS OF THE USE:**

Impacts of environmental education and interpretation will be minimal if conducted in accordance with refuge regulations and policies. Possible impacts include disturbing and displacing wildlife, removing or trampling vegetation, littering, and vandalism. Overall, we expect the adverse impacts to be short-term and confined.

New structures will be sited outside the Monomoy Wilderness, with consideration of the long-term consequences and cumulative impacts to wildlife and habitats. Most of the new structures proposed, e.g. kiosks, observation platforms, photography blinds, would each result in habitat losses of less than ¼ acre. Placement of kiosks, interpretative panels, blinds, and observation platforms may impact small areas of vegetation. Kiosks will be placed where minimal disturbance will occur from both the structures and visitors using them.

Pedestrian travel has the potential to impact shorebird, waterfowl, and other migratory bird populations feeding and resting near the trails and on beaches during certain times of the year. Pedestrians can also impact seals resting on the beach if they get too close. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). Response of wildlife to human activities includes departure from site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschgen et al 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschgen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990).

Numerous studies have documented that migratory birds are disturbed by human activity on beaches. Erwin (1989) documented disturbance of common terns and skimmers and recommended that human activity be restricted to a distance of 100 meters around nesting sites. Klein (1993) in studying waterbird response to human disturbance found that, as intensity of disturbance increased, avoidance response by the birds increased, and found that non-vehicle based activities were more disruptive than vehicular traffic. Pfister et al. (1992) found that the impact of disturbance was greater on species using the heavily disturbed front side of the beach, with the abundance of the impacted species being reduced by as much as 50 percent. In studying the effects of recreational use of shorelines on nesting birds, Robertson et al. (1980) discovered that disturbance negatively impacted species composition. Piping plovers, which intensively use the refuge, are also impacted negatively by human activity. Pedestrians on beaches may crush eggs (Burger 1987, Hill 1988, Shaffer and Laporte 1992, Cape Cod National Seashore 1993, Collazo et al. 1994). Dogs may chase plovers (McConnaughey et al. 1990), destroy nests (Hoopes et al. 1992), and kill chicks (Cairns and McLaren 1980). Other studies have shown that if pedestrians cause incubating plovers to leave their nest, the eggs can overheat (Bergstrom 1991) or can cool to the point of embryo death (Welty 1982). Pedestrians have been found to displace unfledged chicks (Strauss 1990, Burger 1991, Hoopes et al. 1992, Loegering 1992, Goldin 1993).

The Delaware Natural Heritage Program, Division of Fish and Wildlife and the Department of Natural Resources and Environmental Control prepared a document, *The Effects of Recreation on Birds: a Literature Review*, completed in April 1999. The following information was reference from this document.

Several studies have examined the effects of recreation on birds using shallow water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981; Burger 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers and Smith 1995, 1997; Burger and Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreation activities always have at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers and Smith 1997; Burger and Gochfeld 1998). The findings reported in these studies are summarized in terms of visitor activity and avian response to disturbance.

Presence: Birds avoided places where people were present and when visitor activity was high (Burger 1981; Klein et al. 1995; Burger and Gochfeld 1998).



Distance: Disturbance increased with decreased distance between visitors and birds (Burger 1986), though exact measurements were not reported.

Approach Angle: Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993).

Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger and Gochfeld 1981; Burger et al. 1995; Knight and Cole 1995a; Rodgers and Smith 1995, 1997).

Noise: Noise caused by visitors resulted in increased levels of disturbance (Burger 1986; Klein 1993; Burger and Gochfeld 1998), though noise was not correlated with visitor group size (Burger and Gochfeld 1998).

The proposed use has the potential of intermittently interrupting the feeding habits of a variety of shorebirds, gulls, and terns, but encounters between pedestrians and migratory birds will be temporary. Refuge staff will manage visitor access via seasonal closures to minimize disturbance to nesting, resting, and foraging waterbirds on the refuge.

Trash left on the beach, particularly food or wrappers, can attract predators that prey on nesting piping plovers and least terns or roosting shorebirds. Impacts of walking are likely to be minimal if conducted in accordance with refuge regulations. We will manage refuge closures that restrict pedestrian access to minimize disturbance to priority avian species during critical times of the year. Closures can be expanded or contracted as needed, depending on bird activity and results of further disturbance studies. The refuge is a leave-no-trace, carry-in-carry-out facility. All food containers, bottles, and other waste and refuse must be taken out. Littering, dumping, and abandoning property are prohibited by Federal regulation at 50 C.F.R. 27.93.94.

Construction or renovation of a new visitor contact station off Morris Island will result in short-term noise and air pollution. Debris from the construction site will be recycled to the extent possible, with the remainder placed in a landfill. There could be traffic congestion at the visitor contact station site from visitors. If an alternative transportation system is established with parking at the visitor contact station for shuttle access, the number of cars travelling to the refuge headquarters on Morris Island could decrease, reducing vehicle emissions and noise.

All of North Monomoy Island and most of South Monomoy are designated wilderness and are part of the National Wilderness Preservation System. Wilderness, in contrast with those areas where humans and their works dominate the landscape, is an area where the Earth and its community of life are untrammelled by humans, where humans are visitors who do not remain. Preserving wilderness character requires that we maintain both the tangible and intangible aspects of wilderness. Aspects of wilderness character include maintaining the natural, scenic condition of the land; providing environments for native plants and animals, including those threatened or endangered; maintaining watersheds and airsheds in a healthy condition; maintaining natural night skies and soundscapes; retaining the primeval character of and influence on the land; serving as a benchmark for ecological studies; and providing opportunities for solitude, primitive and unconfined outdoor recreation, risk, adventure, education, personal growth experiences, a sense of connection with nature and values beyond one's self, a link to our American cultural heritage, and mental and spiritual restoration in the absence of urban pressures. We provide opportunities for appropriate and compatible use and enjoyment of wilderness areas in a manner that will preserve their wilderness character and will "leave them unimpaired for future use and enjoyment as wilderness."

Environmental education and interpretation will not affect wilderness character. These activities do not alter the natural, scenic condition of the land and will not occur at a scale large enough to diminish the environment for native plants and animals.

Large groups have the potential to negatively infringe on the wilderness experience for those visitors who come to the refuge specifically to have a wilderness experience. This will generally be a short-term impact to a wilderness visitor.

**PUBLIC REVIEW AND COMMENT:**

As part of the comprehensive conservation planning (CCP) process for the Monomoy National Wildlife Refuge, this compatibility determination will undergo a 60-day public comment period concurrent with the release of our draft CCP/Environmental Impact Statement.

**DETERMINATION (CHECK ONE BELOW):**

- Use is not compatible
- Use is compatible, with the following stipulations

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

All environmental education and interpretation activities will avoid sensitive areas prone to disturbance (e.g., sensitive vegetation areas) or degradation (e.g., soil compaction), and will be designed to minimize impacts to nesting birds or other breeding, feeding, or resting wildlife. Access for environmental education and interpretation activities will be on foot. Access by kayak and canoe or boat will be necessary to get to North Monomoy Island and South Monomoy.

Activities will be held on designated sites where only minimal direct and short-term impacts are predicted, and adverse long-term, cumulative impacts are not anticipated. Self-guided and guided interpretive activities in the wilderness can occur anytime when the refuge is open, except in areas that are seasonally closed to protect wildlife.

Occasional law enforcement patrol and regular staff and conservation partner presence should minimize potential violations. We will maintain the current refuge hours (open one-half hour before sunrise to one-half hour after sunset) and restrict entry after daylight hours. We will post and enforce refuge regulations.

Periodic evaluations will be done to insure that visitors and programs are not causing unacceptable adverse impacts. Areas open to these uses will be evaluated on an ongoing basis to ensure visitor safety, compliance with State and Federal tern and plover guidelines, compliance with National Marine Fisheries Service marine mammal regulations, and to minimize impacts on vegetation and wildlife. Areas that are open to this use will be evaluated on an annual, seasonal, and sometimes daily basis and will be influenced by beach geomorphology and wildlife use. Seasonal closures will vary year to year based on wildlife use and habitat conditions. Visitors will be expected to comply with closures. Updates on closures will be available at the Monomoy Headquarters and on the refuge Web site.

**JUSTIFICATION:**

Environmental education and interpretation are priority, wildlife-dependent, public uses identified by the 1997 Refuge Improvement Act. These activities have been determined appropriate by law and, when compatible, are to be facilitated on refuges. These programs support the mission of the National Wildlife Refuge System by promoting an understanding and appreciation of natural and cultural resources and their management within a national system of refuges. Our programs will reach out to all segments of the public to expand support for the refuge system. Individual refuge programs will be consistent with, and fully support, the goals and objectives in the Monomoy NWR Comprehensive Conservation Plan.

Environmental education activities generally support refuge purposes, and impacts can largely be minimized. The minor resource impacts attributed to these activities are generally outweighed by the benefits gained by

educating present and future generations about refuge resources. Environmental education is a public use management tool to develop a resource protection ethic within society. While it targets school-aged children, it is not limited to this group. This tool allows us to educate visitors about endangered and threatened species management, wildlife management, and ecological principles and communities. A secondary benefit of environmental education is that it can instill stewardship in visitors that most likely reduces vandalism, littering, and poaching. Environmental education also strengthens Service visibility in the local community.

Providing additional interpretative and educational brochures and materials may result in increased knowledge of the refuge and its resources. This awareness and knowledge may improve the willingness of the public to support refuge programs and resources and comply with regulations. Environmental education and interpretation activities that identify and explain wilderness should increase understanding and appreciation of, and compliance with, wilderness principles and policies.

We do not expect visitors engaged in environmental education or interpretation to materially interfere with or detract from the mission of the National Wildlife Refuge System or diminish the purpose for which the refuge was established. These activities do not pose significant adverse effects on refuge resources, interfere with public use of the refuge, or cause an undue administrative burden.

Additional funding will be needed to administer a fully developed environmental education and interpretation program. These uses will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purpose of Monomoy NWR. Therefore, it is the determination of the Service that these uses, at the discretion of the refuge manager, are compatible uses and contribute to the purposes for which Monomoy NWR was established.

**SIGNATURE:**

Refuge Manager: \_\_\_\_\_  
(Signature) (Date)

**CONCURRENCE:**

Regional Chief: \_\_\_\_\_  
(Signature) (Date)

**MANDATORY 15 YEAR RE-EVALUATION DATE:**

\_\_\_\_\_

**LITERATURE CITED:**

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## COMPATIBILITY DETERMINATION

### **USE:**

Fin Fishing

### **REFUGE NAME:**

Monomoy National Wildlife Refuge

### **DATE ESTABLISHED:**

June 1, 1944

### **ESTABLISHING AND ACQUISITION AUTHORITY(IES):**

Migratory Bird Conservation Act (16 U.S.C. § 715d) Public Law 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. § 715d).

“...for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and... the preservation of their wilderness character...” (PL 88-577 § 2(a), Wilderness Act; as referenced in P.L. 91-504 § 1(g), An Act to Designate Certain Lands as Wilderness).

### **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 the use a priority public use?**

The use is recreational fin fishing, which includes saltwater fly fishing, surf fishing, rip fishing, and fishing in the refuge's freshwater ponds. This CD covers recreational fin fishing occurring outside the open waters lying above the submerged lands within the Declaration of Taking—fishing occurring in this open water area will be regulated by the National Marine Fisheries Service and the Massachusetts Division of Marine Fisheries. Fishing events, including Service “Take Me Fishing” programs designed to educate anglers new to the sport of fishing, will be held on the refuge. Fishing is a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. § 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57).

#### **(b) Where would the use be conducted?**

This CD only covers recreational fin fishing occurring outside the open waters lying above the submerged lands within the Declaration of Taking—fishing occurring in this open water area will be regulated by the National Marine Fisheries Service and the Massachusetts Division of Marine Fisheries. Areas covered by this CD

include the refuge shoreline, refuge's freshwater ponds on South Monomoy Island, and intertidal areas when these areas are open to public access. All fishing on the refuge occurs in accordance with Federal, State, and local regulations.

**South Monomoy:** The most productive surf fishing location is at the very southern tip of South Monomoy where there is a tidal rip. However, the nearest safe anchorage for boats is in the vicinity of Powder Hole; the walk one-way to the rip is more than ½ mile. As a result of the long walk, there is very little surf fishing from this location. Most anglers opt to fish from their boats in the rip area. Surf fishing occurs concurrently with family day-use of the beach. Most of this activity occurs on the safe anchorage and boat beaching points on the west side of South Monomoy.

**North Monomoy:** There is rarely any surf fishing conducted from this island. The majority of the island and most of the east shoreline is seasonally closed to protect nesting and roosting areas. This seasonal closure will vary year to year based on wildlife use and habitat conditions. Shallow water precludes surf fishing from the west side. Even though surf fishing is limited, fly fishing in the shallow water on the flats has been very popular in the past.

**Morris Island:** Because of the connection of the Morris Island to the mainland and easy vehicular access, this portion of the refuge receives the largest number of surf fishing visits. However, this area is rarely crowded with anglers. A major limiting factor to the one-time use by anglers is the 35-car parking lot at refuge headquarters. Personal observations by staff over the years have noted that there are rarely more than four anglers using the 1-mile refuge shoreline at any one time. Fishing is allowed 24 hours per day. Fish typically caught by anglers include striped bass, bluefish, flounder, and pollock. Most refuge fishing events would be held on Morris Island due to ease of access, and help minimize impacts on refuge seals, terns, plovers, and other shorebirds and seabirds.

**(c) When would the use be conducted?**

Monomoy NWR is open to the public from ½ hour before sunrise to ½ hour after sunset. Surf fishing is permitted 24 hours a day on Morris Island only. The gate and parking lot are open and no permit is required to fish after the refuge is closed. This is the only activity allowed at night on Monomoy NWR. Refuge fishing events would be held at times and on areas of the refuge that minimize impact to seals, terns, plovers, and other shorebirds and seabirds.

**(d) How would the use be conducted?**

Recreational fin fishing must be conducted in accordance with Federal and State regulations and refuge specific policies, including seasonal closures. Walking, kayaks, private motorboats, and paid access via the commercial ferry or a future concessionaire will be the most common means of access for anglers using Monomoy NWR. Refuge staff may partner with organizations to sponsor a fishing tournament designed to introduce more people to fishing on the refuge.

**(e) Why is this use being proposed?**

Recreational fishing is a priority, wildlife-dependent public use. The 1997 Refuge Improvement Act states that priority, wildlife-dependent, public uses should receive enhanced consideration in planning and be facilitated on refuges to the extent they are compatible.

Monomoy NWR is a premier destination for fishing and attracts visitors from across the country. A rip current at the end of South Monomoy Island makes for excellent fishing. Recreational fin fishing offers opportunities to observe wildlife at Monomoy NWR and increases visitor appreciation and awareness of the importance of this site to the National Wildlife Refuge System. Working with partners to hold fishing events will increase the number of people participating in this priority public use on the refuge.

**AVAILABILITY OF RESOURCES:**

Little effort is spent in providing opportunities for fin fishing on the refuge. Refuge staff prepare a closed area map each spring that guides all visitors to the refuge, including anglers. Signs are posted and removed each year to delineate plover, tern, and waterfowl nesting areas. Signs may be retained or relocated to protect major staging sites on the refuge. Signs and posts need to be replaced occasionally. There are expenses involved with the use of refuge boats to move equipment and conduct law enforcement to ensure compliance with refuge regulations. These expenses, for all refuge recreational uses, are approximately \$40,000 per year. For fishing, this is prorated to \$5,000 per year.



The cost of law enforcement patrol to conduct fishing compliance (license, creel limits), ensure visitor safety, and maintain the integrity of the closed areas will be approximately \$10,000 per year.

**Total recurring annual cost** **\$15,000**

### **ANTICIPATED IMPACTS OF THE USE:**

Potential impacts from fin fishing include disturbing and displacing wildlife or trampling vegetation, including salt grass, when anglers get too close to roosting birds or resting seals or when they enter closed areas. This has been a particular problem in the closed areas off North Monomoy Island. Incidences of littering and vegetation removal have occurred. Some disturbance to roosting and feeding shorebirds occurs (Burger 1981) but this is minimized when closed areas are respected. Discarded fishing line and other fishing litter can entangle migratory birds and marine mammals and cause injury and death (Gregory 1991). Litter also impacts the visual experience of other refuge visitors (Marion and Lime 1986). Conflicts with seals over fish could occur, especially if anglers are not observing the 150 foot buffer distance from seals required by the Marine Mammal Protection Act. Several enforcement issues may result from this use, including trampling vegetation following trespass into closed areas, illegal taking of fish (undersized, over limit), illegal fires, and disorderly conduct. Overall, we expect the adverse impacts to be short-term and confined to small areas.

There are impacts to refuge wildlife, vegetation, and soils from pedestrian access for visitors engaged in fishing. Pedestrian travel has the potential to impact shorebird, waterfowl, and other migratory bird populations feeding and resting near the trails and on beaches during certain times of the year. Pedestrians can also impact seals resting on the beach if they get too close. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). Response of wildlife to human activities includes departure from site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschgen et al. 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschgen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990).

Numerous studies have documented that migratory birds are disturbed by human activity on beaches. Erwin (1989) documented disturbance of common terns and skimmers and recommended that human activity be restricted to a distance of 100 meters around nesting sites. Klein (1993) in studying waterbird response to human disturbance found that, as intensity of disturbance increased, avoidance response by the birds increased, and found that out-of-vehicle activity to be more disruptive than vehicular traffic. Pfister et al. (1992) found that the impact of disturbance was greater on species using the heavily disturbed front side of the beach, with the abundance of the impacted species being reduced by as much as 50 percent. In studying the effects of recreational use of shorelines on nesting birds, Robertson et al. (1980) discovered that disturbance negatively impacted species composition. Piping plovers, which intensively use the refuge, are also impacted negatively by human activity. Pedestrians on beaches may crush eggs (Burger 1987, Hill 1988, Shaffer and Laporte 1992, Cape Cod National Seashore 1993, Collazo et al. 1994). Dogs may chase plovers (McConnaughey et al. 1990), destroy nests (Hoopes et al. 1992), and kill chicks (Cairns and McLaren 1980). Other studies have shown that if pedestrians cause incubating plovers to leave their nest, the eggs can overheat (Bergstrom 1991) or can cool to the point of embryo death (Welty 1982). Pedestrians have been found to displace unfledged chicks (Strauss 1990, Burger 1991, Hoopes et al. 1992, Loegering 1992, Goldin 1993).

Several studies have examined the effects of recreation on birds using shallow water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981, 1986, Klein 1993, Burger et al. 1995, Klein et al. 1995, Rodgers and Smith 1995, 1997, Burger and Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreational activities always has at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986, Klein 1993, Burger et al. 1995, Klein et al. 1995, Rodgers and Smith 1997, Burger and Gochfeld 1998). The findings that were reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

Presence: Birds avoided places where people were present and when visitor activity was high (Burger 1981, Klein et al. 1995, Burger and Gochfeld 1998).

Distance: Disturbance increased with decreased distance between visitors and birds (Burger 1986), though exact measurements were not reported.

**Approach Angle:** Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger and Gochfeld 1981, Burger et al. 1995, Knight and Cole 1995, Rodgers and Smith 1995, 1997).

**Type and Speed of Activity:** Joggers and landscapers caused birds to flush more than fishermen, clambers, sunbathers, and some pedestrians, possibly because the former groups move quickly (joggers) or create more noise (landscapers). The latter groups tend to move more slowly or stay in one place for longer periods, and birds likely perceive these activities as less threatening (Burger 1981, 1986, Burger et al. 1995, Knight and Cole 1995). Alternatively, birds may tolerate passing by with unabated speed, but may flush if the activity stops or slows (Burger et al. 1995).

**Noise:** Noise caused by visitors resulted in increased levels of disturbance (Burger 1986, Klein 1993, Burger and Gochfeld 1998), though noise was not correlated with visitor group size (Burger and Gochfeld 1998).

The proposed use has the potential to intermittently interrupt the feeding habits of a variety of shorebirds, gulls, and terns, but encounters between pedestrians and migratory birds will be temporary. To address the impacts posed by pedestrians, refuge staff will manage angler access via seasonal closures to minimize disturbance to nesting, resting, and foraging waterbirds on the refuge.

Visitors accessing Monomoy Island from Chatham town beaches could potentially impact the larval stage of the threatened northeastern beach tiger beetle. The recovery plan for this species describes that many of the species' habitats are threatened by human impacts such as habitat alteration and recreational activities (USFWS 1994). Larval burrows are especially susceptible to trampling, which results in excess energy expenditure and reduced time hunting for the inhabiting individual. We will continue to survey to determine the location and extent of larval beetle occurrence and habitat, and use closures and re-route trails to avoid larval habitats.

Visitor use also has the potential to disturb loafing seals. Gray and harbor seals haul out on the refuge year round. We will enforce or implement the 150-foot buffer around all seals as required by the National Oceanic Atmospheric Administration to ensure compliance with the Marine Mammals Protection Act.

Heavy beach use can dry out the sand and contribute to beach erosion. Trash left on the beach, particularly food or wrappers, can attract predators that prey on nesting piping plovers and least terns or roosting shorebirds. The refuge is a leave-no-trace, carry-in-carry-out facility. We encourage all outfitters and guides to pack in and pack out all food containers, bottles, wrappers, trash, and other waste and refuse. Littering, dumping, and abandoning property are prohibited by Federal regulation at 50 C.F.R. 27.93.94.

There should be little impact from anglers fishing in the wilderness area. Anglers fishing from shore or just offshore within the intertidal area tend to be solitary and quiet. Carts will not be allowed to carry gear in the wilderness area. Refuge fishing events will most likely be held on Morris Island, so there would be little impact to wilderness. If an event is held in the Monomoy wilderness, group size will be limited and the event will be short-term, thereby minimizing impacts to other wilderness visitors. Additionally, any event held within the Monomoy wilderness will undergo a minimum requirements analysis to ensure compliance with wilderness regulations and policies, and help ensure impacts to wilderness character are minimal.

**PUBLIC REVIEW AND COMMENT:**

As part of the comprehensive conservation planning (CCP) process for the Monomoy National Wildlife Refuge, this compatibility determination will undergo a 60-day public comment period concurrent with the release of our draft CCP/Environmental Impact Statement.

**DETERMINATION (CHECK ONE BELOW):**

- Use is not compatible
- Use is compatible, with the following stipulations

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

Areas that are open to this use will be evaluated on an annual, seasonal, and sometimes daily basis and will be influenced by beach geomorphology and wildlife use. Seasonal closures will vary year to year based on wildlife use and habitat conditions. Visitors will be expected to comply with closures. Updates on closures will be available at the Monomoy Headquarters and on the refuge Web site.

Carts or other wheeled equipment may not be used within the wilderness area on North Monomoy Island and South Monomoy.

Occasional law enforcement patrol and regular staff and partner presence should minimize potential violations of refuge closures and curtail illegal fires, littering, and disorderly conduct. Periodic evaluations will be done to ensure that activities associated with the use are not causing unacceptable adverse impacts to the natural resources. Unacceptable levels of violations or disturbance may result in eliminating or restricting public fishing. Occasional law enforcement patrols and regular refuge presence should minimize potential violations of refuge closures and other regulations, e.g., prohibition of dogs.

Public meetings with local fishing clubs and interested parties will facilitate voluntary compliance of regulations. Recreational fishing events will be held only with the sponsorship of the Service and at times, in places, and with methods deemed to comply with State and Federal wildlife regulations and other refuge regulations.

The refuge is a leave-no-trace, carry-in-carry-out facility. All food containers, bottles, and other waste and refuse must be taken out. Littering, dumping, and abandoning property are prohibited by Federal regulation at 50 CFR 27.93.94.

**JUSTIFICATION:**

Recreational fishing is a priority public use identified in the National Wildlife Refuge System Improvement Act of 1997, and facilitates other priority public uses such as wildlife observation and photography. Monomoy NWR is world-renowned for its offshore fish resources and allowing this use will not pose significant adverse effects on refuge resources, nor interfere with other public uses of the refuge. Area closure limitations outlined in this determination provide maximum protection to prime nesting habitat for piping plovers and terns, and minimize disturbance to staging terns and resting seals. Recreational fishing will foster a greater awareness and appreciation of the importance of this site to the National Wildlife Refuge System. Costs associated with administering public fishing and likely visitor impacts are minimal. This use will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purpose of Monomoy NWR. Therefore, it is the determination of the Service that recreational fishing, at the discretion of the refuge manager, is a compatible use and contributes to the purposes for which Monomoy NWR was established.

**SIGNATURE:**

Refuge Manager: \_\_\_\_\_  
(Signature) (Date)

**CONCURRENCE:**

Regional Chief: \_\_\_\_\_  
(Signature) (Date)

**MANDATORY 15 YEAR RE-EVALUATION DATE:**

\_\_\_\_\_

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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Hiking, Walking, and Jogging

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?	✓	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Hiking, Walking, and Jogging

**NARRATIVE:**

The Service and the National Wildlife Refuge System maintain the goal of providing opportunities to view wildlife and take part in interpretation. Allowing the use of refuge areas already open to the public, including one trail system on Morris Island, to persons hiking, walking and jogging supports this goal. Hiking, walking, and jogging are not priority public uses. Hiking and walking do facilitate priority public uses by providing visitors with the chance to view wildlife and engage in wildlife photography and interpretation, which promote public appreciation of the conservation of wildlife and habitats. Joggers are not likely to be observing wildlife but they might stop to read interpretative signs or passively observe wildlife while jogging. Hiking, walking and jogging would not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose for which the refuge was established.

Hiking, walking, and jogging are anticipated to have the same level of impacts as the primary public uses because the access and activities are very similar. Refuge staff will regulate these activities through area closures, so impacts of hiking, walking, and jogging will likely be minimal if conducted in accordance with refuge regulations. For these reasons, hiking, walking, and jogging are appropriate uses on Monomoy NWR.



## COMPATIBILITY DETERMINATION

### **USE:**

Hiking, Walking, and Jogging

### **REFUGE NAME:**

Monomoy National Wildlife Refuge

### **DATE ESTABLISHED:**

June 1, 1944

### **ESTABLISHING AND ACQUISITION AUTHORITY(IES):**

Migratory Bird Conservation Act (16 U.S.C. § 715d) Public Law 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. § 715d).

“...wilderness areas...shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness. (PL 88-577 § 2(a), Wilderness Act; as referenced in P.L. 91-504 § 1(g), An Act to Designate Certain Lands as Wilderness).

### **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?**

The use is hiking, walking or jogging.

#### **(b) Is the use a priority public use?**

This use is not a priority public use of the National Wildlife Refuge System; however, it supports priority public uses since it can contribute to wildlife observation, wildlife photography, and interpretation.

#### **(c) Where would the use be conducted?**

All hiking and walking will be conducted only in areas that are open to the public, including the Morris Island trail system and designated areas on Monomoy Island. Jogging will be conducted only in refuge areas that are open to the public on Morris Island. Certain areas on Monomoy NWR are seasonally closed to public access at the refuge manager’s discretion to protect sensitive habitats or species of concern, minimize conflicts with

other refuge activities, or respond to human health and safety concerns. Hiking and walking have historically been concentrated along and limited to perimeter beaches, the Morris Island Trail and other traditional footpaths on Morris Island and the North Monomoy Corridor; on South Monomoy, hiking and walking occur on the connection to South Beach, the trail to access the Monomoy Light Station and keeper's house, and the trail between the lighthouse and Powder Hole.

**(d) When would the use be conducted?**

Individuals would be able to hike, walk, or jog throughout the year during regular refuge hours, unless otherwise posted by the refuge. Monomoy NWR is open daily from ½ hour before sunrise to ½ hour after sunset, year-round.

**(e) How would the use be conducted?**

Hiking, walking, and jogging tend to be self-regulating, with signs indicating trailheads and appropriate routes of travel, as well as seasonally closed areas. Visitors are encouraged to contact Monomoy NWR staff for up-to-date information on seasonal closures. Information about closures is also available on the refuge Web site or at the visitor center, when staffed.

**(f) Why is this use being proposed?**

Hiking, walking, and jogging are not priority public uses. However, hiking and walking facilitate priority public uses on the refuge. Although hiking, walking are classified as non-wildlife activities, most visitors use the refuge for the wildland experience it provides. Hiking or walking in designated areas of the refuge allows visitors to engage in priority public uses such as wildlife observation, wildlife photography, or interpretation. Joggers are not likely to be observing wildlife but they might stop to read interpretative signs or passively observe wildlife while jogging.

**AVAILABILITY OF RESOURCES:**

The refuge has an existing, self-guided, interpretive loop trail on Morris Island and a short trail bisecting North Monomoy, traversing from the designated boat landing on the east to the salt marsh and tidal flats on the west side. Both areas are maintained for safe hiking or walking and qualitatively monitored by existing refuge staff and volunteers for natural resource impacts at a relatively low annual cost. Allowing hiking or walking within areas otherwise open to the public, and jogging only on Morris Island, will not substantially increase the maintenance or operational needs of the refuge. No entrance fees are collected.

The following breakdown shows the estimated amount of funds needed annually to administer hiking, walking, and jogging refuge wide, including the Monomoy Wilderness.

WG-6 Maintenance Worker - trail/road maintenance	1 week	\$1,200
GS-9 Visitor Services Specialist - hiking information	1 week	\$1,500
GS-9 Law Enforcement Officer	1 week	\$1,800
Fact sheets/materials		<u>\$1,000</u>
<b>Total annual cost</b>		<b>\$5,500*</b>

\* Refuge areas that are open to the public are maintained for a variety of activities. Costs shown are a percentage of total costs for trail/road maintenance on the refuge and are reflective of the percentage of trail/road use for this activity. Volunteers account for some hiking information and trail maintenance hours and help reduce overall cost of the program.

**ANTICIPATED IMPACTS OF THE USE:**

The proposed use is anticipated to have the same level of impacts as the priority public uses because the access and activities are very similar. The impacts to natural resource and wilderness character from hiking, walking, or jogging will likely be minimal if conducted in accordance with refuge regulations and only in areas otherwise open to public access. Possible wildlife and fisheries impacts include disruption of nesting migratory bird populations, terns, shorebirds, and other bird populations feeding and resting near the trails during certain times of the year, impacts to larval threatened northeastern beach tiger beetle populations, and disruption of local seal populations.

On Monomoy NWR, area closures are created to protect priority nesting migratory tern and shorebird species. Although these closure areas are designed to minimize human impacts, the potential exists for impacts to unobserved nesting animals. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). Response of wildlife to human activities includes departure from site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschgen et al. 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschgen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990).

Numerous studies have documented that migratory birds are disturbed by human activity on beaches. Erwin (1989) documented disturbance of common terns and skimmers and recommended that human activity be restricted to a distance of 100 meters around nesting sites. Pfister et al. (1992) found that the impact of disturbance was greater on species using the heavily disturbed front side of the beach, with the abundance of the impacted species being reduced by as much as 50 percent. In studying the effects of recreational use of shorelines on nesting birds, Robertson et al. (1980) discovered that disturbance negatively impacted species composition. Piping plovers, which intensively use the refuge, are also impacted negatively by human activity. Pedestrians on beaches may crush eggs (Burger 1987, Hill 1988, Shaffer and Laporte 1992, Cape Cod National Seashore 1993, Collazo et al. 1994). Other studies have shown that if pedestrians cause incubating plovers to leave their nest, the eggs can overheat (Bergstrom 1991) or can cool to the point of embryo death (Welty 1982). Pedestrians have been found to displace unfledged chicks (Strauss 1990, Burger 1991, Hoopes et al. 1992, Loegering 1992, Goldin 1993).

Several studies have examined the effects of recreation on birds using shallow water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981, 1986, Klein 1993, Burger et al. 1995, Klein et al. 1995, Rodgers and Smith 1995, 1997, Burger and Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreation activities always has at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986, Klein 1993, Burger et al. 1995, Klein et al. 1995, Rodgers and Smith 1997, Burger and Gochfeld 1998). The findings that were reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

**Presence:** Birds avoided places where people were present and when visitor activity was high (Burger 1981, Klein et al. 1995, Burger and Gochfeld 1998).

**Distance:** Disturbance increased with decreased distance between visitors and birds (Burger 1986), though exact measurements were not reported.

**Approach Angle:** Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger and Gochfeld 1981, Burger et al. 1995, Knight and Cole 1995, Rodgers and Smith 1995, 1997).

**Type and Speed of Activity:** Activities where humans move quickly (e.g., jogging) or make loud noises (e.g., landscaping) cause birds to flush more than fishermen, clambers, sunbathers, and some pedestrians. The latter groups tend to move more slowly or stay in one place for longer periods, and birds likely perceive these activities as less threatening (Burger 1981, 1986, Burger et al. 1995, Knight and Cole 1995). Alternatively, birds may tolerate passing by with unabated speed, but may flush if the activity stops or slows (Burger et al. 1995).

**Noise:** Noise caused by visitors resulted in increased levels of disturbance (Burger 1986, Klein 1993, Burger and Gochfeld 1998), though noise was not correlated with visitor group size (Burger and Gochfeld 1998).

Trash left on the beach, particularly food or wrappers, can attract predators that prey on nesting piping plovers and least terns or roosting shorebirds. Impacts of hiking, walking, or jogging are likely to be minimal if conducted in accordance with refuge regulations and only in areas otherwise open to public access. Jogging is not suitable on North and South Monomoy Islands including Nauset/South Beach because of the use of these

areas by nesting and staging birds and seals. We will manage refuge closures that restrict pedestrian access to minimize disturbance to priority avian species during critical times of the year. Closures can be expanded or contracted as needed, depending on bird activity and results of further disturbance studies.

Individuals hiking, walking, or jogging to Monomoy NWR could potentially impact the larval stage of the threatened northeastern beach tiger beetle on South Monomoy Island including Nauset/South Beach. The recovery plan for this species describes human impacts such as habitat alteration and recreational activities that threaten many of the species' habitats (USFWS 1994). Larval burrows are especially susceptible to trampling, which results in excess energy expenditure and reduced time spent foraging by the inhabiting larva.

Pedestrian use also has the potential to disturb loafing seals. Gray and harbor seals haul out on the refuge year round. A 150-foot buffer around all seals is required by the National Oceanic Atmospheric Administration to ensure compliance with the Marine Mammals Protection Act.

Unmanaged hiking, walking, or jogging has the potential to damage or kill plants and lead to new, unwanted, impromptu trails on the refuge that become shortcuts through more ecologically sensitive sites. Heavy use of designated, managed, or unmanaged pedestrian travel routes can ultimately lead to areas void of vegetation (McDonnell 1981, Vaske et al 1992) and potentially destabilize dunes and interdunal wetlands, which are difficult to stabilize and restore to a naturally functioning condition (Kucinski and Einsenmenger 1943, Cole 2002, Goldsmith 2002, Grady 2002, O'Connell 2008).

Trampling has three initial effects: abrasion of vegetation, abrasion of surface soil organic layers, and soil compaction (Cole 2002). Plants can be crushed, sheared off, bruised, and even uprooted by trampling, leading to reduced vigor and reproduction, reduced or altered plant species composition and structure, and reduced biomass and cover (Cole 2002). Of these, abrasion of vegetation is the most common and noticeable effect observed in coastal dune communities, where little or no surface organic layer exists on the sandy soil substrate that naturally resists compaction (Fletcher 1993). All three impacts can commonly occur, however, within coastal marsh habitats where reduced wave energy allows significant accumulation of surface organic layers that are vulnerable to compaction (Fletcher 1993), which increases surface soil bulk density and reduces permeability. Increased ponding and muddy conditions tend to promote wider vegetative and soil impact zones along trails through wet areas (Cole 2002). McDonnell (1981) analyzed long-term human trampling, ranging from low to high intensity, on coastal dune vegetation at Parker River National Wildlife Refuge in Massachusetts. All levels of trampling significantly lowered species diversity, and heavy trampling caused a drastic reduction in species diversity and total vegetation cover. Moderate trampling reduced species diversity but not cover. This was probably because moderate trampling favored some species, such as beach grass over other, more sensitive species, such as beach-heather (*Hudsonia tomentosa*). Trampling may result in changes in plant communities by preventing succession in interdune and backdune areas and favoring disturbance-tolerant foredune species like beach grass.

The harsh growing conditions and environment in the coastal barrier system can make for slow vegetative recovery even after pedestrian traffic is eliminated at trampled sites (Fletcher 1993). The gradient from no vegetation to normal cover levels is very narrow along refuge trails and other footpaths where trampling is more concentrated, and is wider at traditional boat landings where trampling is more dispersed. Hiking and walking are among the most primitive forms of recreation, and the trails themselves encourage users to confine their hiking or walking to narrow corridors radiating or looping outward from user focal areas such as beach access points or boat landings. Such localized impacts, concentrated near a small number of the most popular destinations, do not pose any serious disruption to the barrier ecosystem composition, structure, and function and are not evident at large spatial scales on Monomoy NWR.

Once established, the trails themselves are clear evidence of human presence that detracts from some users' perceptions of an otherwise untrammelled, undeveloped, or otherwise natural appearing landscape (Hendee and Dawson 2002) within the Monomoy Wilderness. Bare, exposed, sand dune areas, potentially compacted tidal marsh segments, trail treads, and narrow zones of disturbed vegetation on either side of refuge foot trails and boat landings will be readily evident, but when trail standards are kept minimal, trails tend to be accepted or even expected by most, though not all, wilderness users (Stankey and Schreyer 1987, Cole 2002, Hendee and Dawson 2002). The majority of the Monomoy Wilderness will remain essentially unvisited and virtually undisturbed by hiking and walking. Pedestrian footpaths are not expected to substantially compromise the

perception of naturalness of the Monomoy Wilderness landscape or the wilderness user’s experience (Cole 2002, Hendee and Dawson 2002).

Wilderness visitors’ experiences are most strongly affected by social conditions, such as other visitors and their actions, than by their perception of naturalness or ecological conditions (Hendee and Dawson 2002). The trails themselves tend toward promoting a confining rather than an unconfined user experience (Hendee and Dawson 2002). With typically long sight distances across Monomoy’s rolling nearly treeless coastal barrier landscape, too many individuals encountered or observed hiking or walking during visits by other Monomoy Wilderness users likely detracts from the sense of solitude experienced by wilderness users (Stankey and Schreyer 1987, Hendee and Dawson 2002). However, hiking and walking use is still currently very light in the more remote, interior portions of South Monomoy open to public use, where outstanding opportunities for solitude can be experienced by other Monomoy Wilderness users.

**PUBLIC REVIEW AND COMMENT:**

As part of the comprehensive conservation planning (CCP) process for the Monomoy National Wildlife Refuge, this compatibility determination will undergo a 60-day public comment period concurrent with the release of our draft CCP/Environmental Impact Statement.

**DETERMINATION (CHECK ONE BELOW):**

- Use is not compatible
- Use is compatible with the following stipulations

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

- All hiking, walking, and jogging will be done only in areas that are otherwise open to the public. Jogging may only be done on refuge lands on Morris Island otherwise open to public access.
- All individuals hiking, walking, or jogging must adhere to area closures and understand that certain destinations may not be available year-round. Areas that are open to this use will be evaluated on an annual, seasonal, and sometimes daily basis and will be influenced by beach geomorphology and wildlife use. Seasonal closures will vary year to year based on wildlife use and habitat conditions. Visitors will be expected to comply with closures. Updates on closures will be available at the Monomoy Headquarters and on the refuge Web site.
- No physical items, including litter, will be placed or left on the refuge. The leave-no- trace principles and practices (e.g., pack it in and pack it out) will be implemented on a refugewide basis, including the Monomoy Wilderness.
- Dogs and other pets are not allowed on the refuge.
- No items will be removed from the refuge. Take only photos, leave only footprints.
- All hikers, walkers, and joggers must maintain a 150-foot buffer around all seals as required by the National Oceanic Atmospheric Administration to ensure compliance with the Marine Mammals Protection Act.
- Refuge visitor information services and products will emphasize the importance of staying on trails and out of seasonal closure areas, along with providing leave-no-trace hiking tips.
- Refuge staff or volunteers will periodically qualitatively and photographically document pedestrian impacts to vegetation and soils to footpaths, boat landings, and other known user concentration points for use in drafting or updating a Monomoy Wilderness Stewardship Plan.

**JUSTIFICATION:**

The Service and the National Wildlife Refuge System maintain the goal of providing opportunities to view or photograph wildlife and to take part in interpretation. Allowing the use of refuge areas that are already open to the public including, but not limited to, one interpretive trail on Morris Island, the North Monomoy Corridor; on South Monomoy, hiking and walking occur on the connection to South Beach, the trail to access the Monomoy Light Station and keeper’s house, and the trail between the lighthouse and Powder Hole. Jogging will be conducted only in areas that are open to the public on Morris Island. Although hiking or walking are not priority public uses, they facilitate priority public uses, providing visitors with the chance to view or photograph wildlife and engage in interpretation and recreational fishing, thereby promoting public appreciation of the conservation of wildlife and habitats. Hiking, walking, or jogging at current and expected levels of use, and subject to the stipulations listed above will not materially interfere with or detract from preserving wilderness character in the Monomoy Wilderness, the fulfillment of the National Wildlife Refuge System mission, or the purpose for which the refuge was established.

**SIGNATURE:**

Refuge Manager: \_\_\_\_\_ (Signature) \_\_\_\_\_ (Date)

**CONCURRENCE:**

Regional Chief: \_\_\_\_\_ (Signature) \_\_\_\_\_ (Date)

**MANDATORY 10 YEAR RE-EVALUATION DATE:** \_\_\_\_\_

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**FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Mosquito Monitoring and Control

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

<b>Decision Criteria:</b>	<b>YES</b>	<b>NO</b>
(a) Do we have jurisdiction over the use?	✓	
(b) Does the use comply with applicable laws and regulations (Federal, State, Tribal, and local)?	✓	
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	✓	
(d) Is the use consistent with public safety?	✓	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	✓	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	✓	
(g) Is the use manageable within available budget and staff?	✓	
(h) Will this be manageable in the future within existing resources?	✓	
(i) Does the use contribute to the public’s understanding and appreciation of the refuge’s natural or cultural resources, or is the use beneficial to the refuge’s natural or cultural resources?		✓
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	✓	

Where we do not have jurisdiction over the use [“no” to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe [“no” to (b), (c), or (d)] may not be found appropriate. If the answer is “no” to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes  No .

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor’s concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

**Not Appropriate**  **Appropriate**

Refuge Manager: \_\_\_\_\_ Date: \_\_\_\_\_

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence:

Refuge Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

**A compatibility determination is required before the use may be allowed.**

**JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE**

**Refuge Name:** Monomoy National Wildlife Refuge

**Use:** Mosquito Monitoring and Control

**NARRATIVE:**

Mosquito management includes population monitoring and control, if warranted. Mosquito surveillance monitoring and control, when necessary, will be conducted in several small pools, or pannes, within a 5-acre salt marsh on the Morris Island portion of the refuge. Mosquito and mosquito-borne disease management is not a priority public use of the National Wildlife Refuge System (NWRS) under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act.

Mosquito population monitoring and control would be conducted by the Cape Cod Mosquito Control Project (CCMCP) following the protocols and best management practices identified in the Massachusetts Arbovirus Surveillance and Response Plan (Massachusetts Department of Public Health 2012) and in compliance refuge-specific regulations. In general, we allow populations of native mosquito species to function unimpeded unless they cause a wildlife or human health threat. Mosquitoes are a natural component of most wetland ecosystems but may also represent a threat to human, wildlife, or domestic animal health. Refuges are to collaborate with Federal, State, or local public health authorities and vector control agencies to identify refuge-specific health threat categories that represent increasing levels of health risks and are based on monitoring data.

Mosquito-associated health threats will be addressed using an integrated pest management (IPM) approach, including when practical, compatible, non-pesticide actions that reduce mosquito production. Treatment options will be chosen based on our IPM policy (569 FW 1) and our NWRS Biological Integrity Diversity and Environmental Health policy (601 FW 3), and will emphasize human safety and environmental integrity, effectiveness, and cost factors. We will use human, wildlife, or domestic animal mosquito-associated health threat determinations, combined with refuge mosquito population estimates, to determine the appropriate refuge mosquito management response. We will allow pesticide treatment to control mosquitoes on refuge lands only after evaluating all other reasonable IPM actions, based on monitoring data for the relevant mosquito life stage and only when necessary to protect human or wildlife health, when mosquitoes are detrimental to refuge management goals and objectives, and control does not interfere with achieving management goals and objectives. We will use current monitoring data for larval, pupal, and adult mosquitoes to determine the need for larvicides, pupicides, and adulticides, respectively. We will allow the use of adulticides only when there are no practical, effective alternatives to reduce a health threat during a declared public health emergency.

## COMPATIBILITY DETERMINATION

### **USE:**

Mosquito Monitoring and Control

### **REFUGE NAME:**

Monomoy National Wildlife Refuge

### **DATE ESTABLISHED:**

June 1, 1944

### **ESTABLISHING AND ACQUISITION AUTHORITY(IES):**

Migratory Bird Conservation Act (16 U.S.C. § 715d) Public Law 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. § 715d (Migratory Bird Conservation Act)

...wilderness areas...shall be administered for the use and enjoyment of the American people in such a manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness. (PL 88-577 § 2(a), Wilderness Act; as referenced in P.L. 91-504 § 1(g), An Act to Designate Certain Lands as Wilderness)

### **NATIONAL WILDLIFE REFUGE SYSTEM MISSION:**

The mission of the National Wildlife Refuge System 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. (National Wildlife Refuge System Improvement Act of 1997, Public Law 105-57; 111 Stat. 1252).

### **DESCRIPTION OF USE:**

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

The use is mosquito management, which includes population monitoring and, if warranted, control. Mosquito and mosquito-borne disease management is not a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997.

The Cape Cod Mosquito Control Project (CCMCP) will conduct mosquito population monitoring and control, following the protocols and best management practices identified in the Massachusetts Arbovirus Surveillance and Response Plan (Massachusetts Department of Public Health 2012). The Service recognizes that mosquitoes are a natural component of most wetland ecosystems but may also represent a threat to human, wildlife, or domestic animal health. Refuges are to collaborate with Federal, State, or local public health authorities and

vector control agencies to identify refuge-specific health threat categories that represent increasing levels of health risks and are based on monitoring data. Refuges will not conduct mosquito monitoring or control, but may allow these activities under special use permits.

**(b) Where would the use be conducted?**

Mosquito surveillance monitoring and control, if necessary, will be conducted in several small pools within a 5-acre salt marsh on the Morris Island portion of the refuge. The refuge lies within the jurisdiction of the CCMCP, which has conducted mosquito control activities on Morris Island (both on and off-refuge) since the CCMCP was organized in 1930. The CCMCP controlled larval mosquitoes in these small pools from at least 1983 until August 2001, when the practice was suspended pending review of the Service's new compatibility process. In July 2003, the Service found mosquito surveillance and limited mosquito control to be compatible, and the CCMCP resumed surveillance and larvicidal mosquito control of select mosquito species.

**(c) When would the use be conducted?**

Surveillance activities associated with this use would be conducted on the Morris Island portion of the refuge from April through October by CCMCP staff under the conditions of this compatibility determination and a special use permit (SUP). Known sites of mosquito development on the refuge will be visited for monitoring and surveillance during periods of mosquito production. The timing and frequency of monitoring is based on a number of factors, including history of mosquito production, tidal cycles, precipitation levels, and available resources, but could occur as frequently as weekly throughout the season.

Mosquito control occurs irregularly when necessary to protect the health and safety of humans, wildlife, or domestic animals. Any mosquito control activities will be conducted on the basis of surveillance data. CCMCP treatment of refuge marshes using larvicides would occur only after the CCMCP has provided the refuge manager with data that shows that mosquito larvae populations are widespread within the salt marsh, and after monitoring indicates *O. cantator* and *O. sollicitans* larval counts exceed an average of 10 larvae per standard (350 ml) dipper. Other factors used to determine whether treatment would be allowed include marsh hydrology (drying versus flooding), rainfall, temperature, instar larval stages, and spray history.

Pupacides or adulticides will only be used when large numbers of mosquitoes are considered an immediate threat to human health and thresholds developed by the appropriate public health authority are met or exceeded, i.e., there is active transmission of mosquito-borne disease on the refuge from refuge-based mosquitoes.

**(d) How would the use be conducted?**

Mosquito-associated health threats will be addressed using an integrated pest management (IPM) approach including, when practical, compatible, non-pesticide actions that reduce mosquito production. We will choose treatment options based on our IPM policy (569 FW 1) and our Biological Integrity Diversity and Environmental Health policy (601 FW 3). We will base the choice on, in order of preference: human safety and environmental integrity, effectiveness, and cost. We will use human, wildlife, or domestic animal mosquito-associated health threat determinations combined with refuge mosquito population estimates to determine the appropriate refuge mosquito management response. We will consider allowing pesticide treatment to control mosquitoes on refuge lands after we evaluate all other reasonable IPM actions. Based on monitoring data, we will determine the most appropriate pesticide treatment options for the relevant mosquito life stage. We will use current monitoring data for larval, pupal, and adult mosquitoes to determine the need for larvicides, pupacides, and adulticides, respectively. Mosquito and arbovirus surveillance, monitoring, and treatment within the refuge have historically focused on several small pools within the salt marsh along the northwest refuge boundary on Morris Island. This is shown as area 81 on map D.1. Treatment areas will be based on surveillance and monitoring results. Specific areas treated and the extent of treatment would vary from year to year depending on mosquito populations, the mosquito vector flight distance, and environmental conditions. We will allow the use of adulticides only when there are no practical, effective alternatives to reduce a health threat. We will not allow pesticide treatments for mosquito control on the refuge without current mosquito population data indicating that such actions are warranted. We require an approved pesticide use proposal (PUP) prior to an application of a pesticide on refuge lands.

In Massachusetts, mosquito control activities and work are performed pursuant to the provisions of chapter 252 of the Massachusetts General Laws (<http://www.mass.gov/agr/mosquito>). The CCMCP, as one of the nine mosquito control projects authorized under chapter 252, monitors larval and adult mosquitos on the refuge <http://ccmcp.net> and adheres to the Massachusetts Arbovirus Surveillance and Response Plan (Massachusetts Department of Public Health 2012). Additionally, the CCMCP will conduct surveillance, monitoring, and if necessary, control measures under the conditions contained in a SUP that will be issued by the refuge manager.

Map D.1. Mosquito Harboring Locations on Morris Island and Vicinity, Chatham, Massachusetts

