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FWS Form 3-2319
02/06

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Monomoy National Wildlife Refuge

Use: Research Conducted by Non-Service Personnel

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.

603 FW 1
Exhibit 1
Page 2

JUSTIFICATION FOR A FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Monomoy National Wildlife Refuge

Use: Research Conducted by Non-Service Personnel (We reserve the right to make appropriateness findings for any specialized research project by non-Service personnel request on a case-by-case basis)

NARRATIVE:

Research conducted by non-Service personnel is not identified as a priority public use of the National Wildlife Refuge System (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. This use is not a priority public use of the Refuge System. However, research by non-Service personnel is often conducted by colleges, universities, Federal, State, and local agencies, non-governmental organizations, and qualified members of the general public. Research on Monomoy National Wildlife Refuge (NWR, refuge) would further the understanding of the natural environment and could be applied to management of the refuge's wildlife.

The Service encourages and supports research and management studies on refuge lands that will improve and strengthen decisions on managing natural resources. Research by other than Service personnel adds greatly to the information base for refuge managers to make proper decisions. The refuge manager encourages and seeks research that clearly relates to approved refuge objectives, improves habitat management, and promotes adaptive management. Priority research addresses information to better manage the refuge's biological and wilderness resources, or addresses management issues at Monomoy. We will generally support research that addresses important management issues or demonstrates techniques for managing species or habitats that are important to agencies of the Department of the Interior, the National Wildlife Refuge System, and state fish and game agencies. Much of the refuge is designated national wilderness, so some constraints on how or where research is conducted may be necessary.

All research proposals are evaluated for their benefits to the refuge and the Refuge System mission. The refuge manager will issue a special use permit for all approved research projects. All research projects require the principal investigator to provide summary reports of findings and acknowledge the refuge for their participation. At the time of request, a determination will be made by refuge staff whether the proposed research benefits the understanding of the natural environment and will contribute useful information to the Service and Refuge System. The entire refuge may be open and available for scientific research. The research location will be limited to those areas of the refuge that are absolutely necessary to conduct of the research project. The timing of each individual research project will be limited to the minimum required to complete the project. The refuge reserves the right at any time to find a specific request for a research project by non-Service personnel to be inappropriate or incompatible with the refuge's purposes, Service mission or the refuge's conservation management goals and objective established in the CCP and any stepped down management plan, based on each individual review and assessment of each project's research details.

Not all research may be appropriate. Some research may affect fish, wildlife, and plants in a manner neither consistent with refuge management plans nor compatible with refuge purposes or the Refuge System mission. Some research may interfere with or preclude refuge management activities, appropriate and compatible public uses, or other research. Some research may be appropriate off the refuge, but not on the refuge. Therefore, we must evaluate each research proposal independently and may deny a request for a special use permit because we find the proposal to be inappropriate or incompatible.

No additional equipment, facilities, or improvements will be necessary to allow research by non-Service personnel. Staff time would be required to review research proposals and oversee permitted projects. We expect that conducting these activities will require less than one-tenth of a work-year for one staff member.

Non-Service organizations and personnel conducting research on the refuge will be required to provide the Service with all data collected and/or reports. The research organization/agency or personnel in conjunction with the Service will retain the use and ownership of all data/reports.

Disturbance to wildlife and vegetation by researchers could occur through observation, sampling, or accessing the study area. It is possible that direct mortality could result as a by-product of research activities.

Negligible impacts will occur when research projects which are previously approved in the compatibility determination are carried out according to the stipulations stated in the special use permit issued for each

project. Overall, however, allowing well designed and properly reviewed research to be conducted by non-Service personnel is likely to have very little impact on refuge wildlife populations. If the research project is conducted with professionalism and integrity, potential adverse impacts are likely to be outweighed by the knowledge gained about a species, habitat, or public use.

After evaluating research by non-Service personnel under Service policies, we conclude that the activity is appropriate as it contributes to and supports refuge management, purposes, and goals, and the mission of the Refuge System.

COMPATIBILITY DETERMINATION

USE:

Research Conducted by Non-Service Personnel

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 the conduct of scientific research on the refuge by students, universities, and other non-Service personnel. Research conducted on the refuge by non-Service personnel 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 (Public Law 105-57).

(b) Where would the use be conducted?
The location of the research will vary depending on the individual research project being conducted. The entire refuge is available for scientific research. An individual research project is usually limited to a particular habitat type, plant, or wildlife species. On occasion, research projects will encompass an assemblage of habitat types, plants, or wildlife, or may span more than one refuge or include lands outside the refuge. The research location will be limited to those areas of the refuge necessary to achieve the research objectives and that do not

create a significant negative impact to refuge operations and wildlife use. Because of the need to close parts of the refuge spatially or temporally to protect refuge wildlife, some research may not be able to be conducted on the refuge. Much of Monomoy NWR is included in the Monomoy Wilderness, which could impact where or how we allow research to be conducted.

(c) When would the use be conducted?
The timing of the research will depend entirely on the individual research project's approved design. Scientific research will be allowed to occur on the refuge throughout the year, unless it conflicts with the protection of seals, terns, plovers, other migratory shorebirds and seabirds, invertebrates, or plants of management priority or degrade wilderness character. An individual research project could be short- term in design, requiring one or two visits over the course of a few days. Other research projects could be multiple year studies that require daily visits to the study site or staying overnight on South Monomoy. The timing of each individual research project will be limited to the minimum required to complete the project.

(d) How would the use be conducted?
The methods of the research will depend entirely on the individual research project conducted. The methods and study design of each research project will be reviewed and scrutinized before the project will be allowed to occur on the refuge. No research project will be allowed if it does not have an approved scientific method, if it negatively affects endangered species, marine mammals, or migratory birds, if it cannot be conducted consistent with wilderness preservation, or if it compromises public health and safety.

Access to Morris Island is primarily facilitated by pedestrian (walking) access, with access to the rest of Monomoy refuge being primarily by boat. Both these means of access are used by Service staff when conducting biological surveys, roving interpretation, and natural and cultural history tours.

(e) Why is this use being proposed?
Research by non-Service personnel is conducted by colleges, universities, Federal, state, local agencies, non-governmental organizations, and qualified members of the public to further the understanding of the natural, physical, and wilderness refuge environments and improve management of refuge natural and wilderness resources. Research is therefore an important part of the adaptive management process that often results in improved management of refuge habitats and wildlife populations or wilderness character. Much of the information generated by the research is applicable to management on and near the refuge.

The Service will encourage and support research and management studies on refuge lands that improve and strengthen natural resource and wilderness management decisions. The refuge manager will encourage and seek research related to approved refuge objectives that clearly improves land management and promotes adaptive management. Priority research addresses information that is important to agencies of the Department of the Interior, U.S. Fish and Wildlife Service, National Wildlife Refuge System, state fish and game agencies and other agencies responsible for managing natural resources.

The refuge will also consider research for other purposes that may not be directly related to refuge-specific objectives, but will contribute to the broader enhancement, protection, use, preservation and management of native populations of fish, wildlife, and plants, and their natural diversity within the region or flyway. These proposals must comply with the Service's governing laws, regulations, and policies.

The refuge will maintain a list of research needs that will be provided to prospective researchers or organizations upon request. Refuge support of research directly related to refuge objectives may take the form of funding, in-kind services such as housing or use of other facilities, direct staff assistance in the form of collecting data, providing historical records, conducting management treatments, or other assistance as appropriate.

AVAILABILITY OF RESOURCES:

The cost for research is incurred in staff time to review research proposals, coordinate with researchers, write and administer special use permits, and, in some instances boat support and fuel. At an hourly rate of approximately $50.00 for a GS-09 step 6, this totals about $11,000 annually for resources spent on outside research.

Research program administration	1 staff	160 hours	$ 8,000
Boat support	1 staff	40 hours	$ 2,000
Boat fuel and maintenance			$ 1,000
Total annual costs:			**$11,000**

ANTICIPATED IMPACTS OF THE USE:

The Service encourages approved research to further the understanding of natural resources. Research by other than Service personnel adds to the best available information base supporting management decisions. Disturbance to wildlife and vegetation by researchers could occur through direct or remote observation, telemetry, capture (mist-netting, canon netting), banding, and accessing the study area by foot or by boat. These impacts could be exacerbated by multiple concurrent research projects. It is possible that direct mortality could result as a by-product of research activities. Mist-netting, for example, can cause stress, especially when birds are captured, banded and weighed. There have been occasional mortalities to birds, when predators reach the netted birds before researchers do. Temporary installations (e.g., telemetry receivers, remote cameras or acoustic sensors, solar panels) or the visible presence of research personnel to other wilderness users can impact the sense of solitude or untrammeled wildness experienced by wilderness visitors.

Minimal impact will occur when research projects that have been approved are carried out according to the stipulations stated in the special use permit issued for each project. Overall, allowing well-designed and properly reviewed research to be conducted by non-Service personnel is likely to have very little impact on refuge wildlife populations, wilderness user experiences, or wilderness character. If the research project is conducted with professionalism and integrity, potential adverse impacts are likely to be outweighed by the knowledge gained about an entire species, habitat, or public use.

Because Service or partner staff will supervise this activity, impacts of research will likely be minimal if conducted in accordance with refuge regulations, and minimum requirements analyses if within the Monomoy Wilderness. In the event of persistent disturbance to habitat or wildlife, or to wilderness character, the activity will be further restricted or discontinued.

Potential Pedestrian Impacts

Potential Direct Impacts

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 who get too close can also impact seals resting on the beach. 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, Roberton 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 Code 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; 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 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).

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 researcher access via seasonal closures to minimize disturbance to nesting, resting, and foraging waterbirds on the refuge.

Researchers accessing Monomoy 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.

Researcher 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 recommended by the National Oceanic Atmospheric Administration to ensure compliance with the Marine Mammals Protection Act.

Pedestrian Indirect Impacts

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 research are likely to be minimal if conducted in accordance with refuge regulations.

Potential Impacts to Wilderness Character

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 untrammeled 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 outstanding opportunities for solitude or 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 preserves their wilderness character and "leave them unimpaired for future use and enjoyment as wilderness."

There are some aspects of the wilderness character that could be affected by research conducted on the refuge. Wilderness visitors' experiences are most strongly affected by social conditions, such as other people and their actions, than by their perception of naturalness or ecological conditions (Hendee and Dawson 2002). With typically long sight distances across Monomoy's rolling nearly treeless coastal barrier landscape, too many individuals or structures encountered during visits likely detracts from the sense of solitude experienced by wilderness users (Stankey and Schreyer 1987, Hendee and Dawson 2002).

Research may need to be conducted in areas of the island that are less traversed by wilderness users. This could lead to the establishment of new trails. Once established, the trails themselves are clear evidence of human presence that detracts from some users' perceptions of an otherwise untrammeled, undeveloped, or 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, but not all, wilderness users (Stankey and Schreyer 1987, Cole 2002, Hendee and Dawson 2002).

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

__**X**__ Use is compatible with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

All researchers will be required to submit a detailed research proposal following Service Policy (FWS Refuge Manual Chapter 4 Section 6, as may be amended), as well as a completed National Wildlife Refuge System Special Use Research and Monitoring Application and Permit. This can be found at *http://www.fws.gov/forms/3-1383-R.pdf.* The application can be submitted to the refuge manager via email or by fax. The refuge must be given at least 45 days to review and decide whether to approve proposals before initiation of research. If collection of wildlife is involved, the refuge must be given 60 days to review and decide whether to approve the proposal. The Service cannot guarantee that it will review or approve proposals not submitted within these timeframes.

In order to preserve wilderness character, research proposed to be conducted in the Monomoy Wilderness will require extra scrutiny using the minimum requirements decision guide to ensure the methods proposed are the minimum necessary for achieving the refuge purpose. Researchers may be asked to draft minimum requirement analyses to expedite review and issuance of conditions designed to protect wilderness. Proposals will be prioritized and approved based on need, benefit, compatibility, and funding required.

Research proposals are reviewed by refuge staff and conservation partners, as appropriate, for approval. Evaluation criteria currently include, but are not limited to, the following:

- Research that will contribute to specific refuge management issues will be given higher priority over other research requests.
- Research that will conflict with other ongoing research, monitoring, or management programs will not be permitted.
- Research projects that can be accomplished off-refuge are less likely to be approved.
- Research that causes undue disturbance or is intrusive will likely not be permitted. Level and type of disturbance will be carefully evaluated when considering a request.
- Refuge evaluation will determine if any effort has been made to minimize disturbance through study design, including considering adjusting location, timing, scope, number of permittees, study methods, number of study sites, etc.
- If staffing or logistics make it impossible for the refuge to monitor researcher activity in a sensitive area, the research request may be denied, depending on the specific circumstances.
- The length of the project will be considered and agreed upon before approval. Projects will be reviewed annually.

Special use permits will be issued for all research conducted by non-Service personnel. The permit will list all conditions necessary to ensure compatibility and will identify a schedule for periodic progress reports and submittal of a final report or scientific paper. The regional refuge biologists, other Service divisions, and Massachusetts State agencies may be asked to review and comment on proposals. All reports, presentations, posters, articles or other publications will acknowledge the Refuge System and Monomoy NWR as partners in the research. Non-Service organizations and personnel conducting research on the refuge will provide the Service with all data collected and/or reports. The research organization/agency or personnel in conjunction with the Service will retain the use and ownership of all data/reports.

All researchers will be required to obtain appropriate State and Federal permits.

Any research project may be terminated at any time for non-compliance with the conditions of the special use permit, or modified, redesigned, relocated, or terminated upon determination by the refuge manager that the project is causing unanticipated adverse impacts to wildlife, wildlife habitat, wilderness character, approved priority public uses, or refuge resources of staff time, equipment, or funding. Where appropriate, some areas may be temporarily or seasonally closed so that research would be permitted when impacts to wildlife and habitat or wilderness character are less of a concern.

All work with endangered species will require the proper permits from Federal or State government. Researchers may also need State and Federal collection permits and may need to provide an assurance of animal care form or an institutional animal approval form, if applicable.

JUSTIFICATION:

This program as described is determined to be compatible. Any potential negative impacts of research activities on the resources of the refuge will be minimized by the restrictions included in the special use permit special conditions. In addition, the research study design and researcher activities will be regulated and monitored by refuge staff.

The Service encourages approved research to further our understanding of refuge natural resources. Research by non-Service personnel, guided by the stipulations listed above, adds greatly to the information base for refuge managers to make proper refuge management decisions. This use will potentially contribute to the refuge's concurrent purposes in carrying out migratory bird management and preserving wilderness character. While some research activities may cause minimal disturbance to wildlife or result in the loss of specific individuals, this impact will be offset by the value of the research to managers and future generations.

In accordance with 50 CFR 26.41, research conducted by non-Service personnel as described in this compatibility determination, will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established.

SIGNATURE:

Refuge Manager: _____ _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____ _____
(Signature) (Date)

MANDATORY 10 YEAR RE-EVALUATION DATE: _____

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FWS Form 3-2319
02/06

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Monomoy National Wildlife Refuge

Use: Sunbathing and Swimming

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: Sunbathing and Swimming

NARRATIVE:

Although Service policy does not specifically encourage sunbathing and swimming, these activities often facilitate priority uses such as wildlife observation and photography. The use is a traditional refuge activity that attracts many visitors, especially during the summer and early fall, which increases the refuge's ability to provide opportunities for the priority public uses described in the Refuge System Improvement Act of 1997. The use is not expected to have adverse impacts on refuge wildlife and habitat. Mainland refuge beaches are submerged for approximately 3 hours during high tide, making them inaccessible for approximately 6 hours per day. For this reason, it is unlikely that swimming and sunbathing will increase significantly as a primary public use. Extremely limited visitor parking, lack of facilities on the islands, and often rough boating conditions will also limit the numbers of visitors who go out solely for beach use, especially when there are several other local beaches that offer similar recreational opportunities and are much easier to access. Areas used heavily by migratory birds for feeding, roosting, or nesting are closed April through September, so this activity represents only a minimal disturbance factor.

Allowing swimming and sunbathing 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 the Monomoy NWR. Therefore, it is the determination of the Service that swimming and sunbathing use, at the discretion of the refuge manager, is a compatible use of the Monomoy NWR.

COMPATIBILITY DETERMINATION

USE:

Sunbathing and Swimming

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?
Sunbathing and swimming are 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 (Public Law 105-57). However, it is a traditional use at the refuge, mainly from June through August. Visitors engaged in this use may also find themselves observing wildlife on the refuge.

(b) Where would the use be conducted?
Although Service policy does not encourage such use, many summer visitors come to the refuge for the primary purpose of sunbathing and swimming. Popular areas include Morris Island and, when open to the public, the east side of North Monomoy, the sandbars between the islands, and the beach just west of Powder Hole.

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 sunbathing and swimming would be conducted only in areas that are open to the public and do not impact sensitive wildlife or vegetation.

(c) When would the use be conducted?
Monomoy NWR is open daily to the public from ½ hour before sunrise to ½ hour after sunset. Individuals would be able to sunbathe and swim during regular refuge hours, unless otherwise posted by the refuge.

(d) How would the use be conducted?
The use must be conducted in accordance with refuge regulations, including seasonal closures.

The use is primarily facilitated by pedestrian walking and hiking access, commercial ferry access, or boat. Boats are allowed to land anywhere along the refuge shoreline, with the exception of posted tern colonies and piping plover nesting areas. The presence of hazardous currents and shoals encourages visitors to land their boats in only a few designated locations.

In general, sunbathing and swimming are self-regulated, with signs indicating closed areas. All 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 or at the visitor contact station, when staffed.

(e) Why is this use being proposed?
Visitors come to the beaches at Monomoy NWR for a number of reasons, including sunbathing and swimming. However, these are not expected to become the primary reason for public visitation due to the lack of parking at the refuge headquarters, the limited number of hours that the beach at Morris Island is available, high tides, the lack of facilities on North Monomoy Island and South Monomoy, the amount of beach closed during the summer, and the inconvenience of getting to the islands. Most visitors will come to observe seals, shorebirds, and seabirds, see the Monomoy Point lighthouse, and fish. Families will come with diverse interests, and swimming and sunbathing will often be secondary to the primary reason for the family visit. The ability to sunbathe and swim will increase the number of visits by entire families, and may prolong the amount of time visitors spend on the refuge. Affording opportunities for public enjoyment by allowing this type of beach use will increase visitor appreciation and foster a greater awareness of the importance of this site to the National Wildlife Refuge System.

AVAILABILITY OF RESOURCES:

Few additional resources are needed to facilitate sunbathing and swimming. The estimated costs of allowing these uses are minimal because little infrastructure is involved and the administration of these uses is done in conjunction with other uses. The costs include all beach activities, including beachcombing, and costs associated with signs, law enforcement, and visitor services contacts are common to these uses.

There are labor costs for annually posting closed plover, tern, and waterfowl nesting areas; there are replacement costs for posts and signs. There are also prorata shares of the annualized cost for special open beach signs, prorata shares of administrative costs, and prorata shares of vehicle, boat, motor, and other specialized equipment costs.

Law Enforcement patrol would be necessary to ensure integrity of the closed nesting areas, especially for piping plovers.

Recurring annual costs:			
Sign replacement and posting			$5,000
Coordination with public and media			$2,000
GS-9 Law Enforcement	1 staff	40 hours	$1,800
Boat fuel, boat maintenance, etc.			$2,500
Total recurring annual costs:			**$11,300**

ANTICIPATED IMPACTS OF THE USE:

Boats are allowed to land anywhere along the refuge shoreline, with the exception of posted tern colonies and piping plover nesting areas, but the presence of hazardous currents and shoals encourages visitors to land their boats in only a few designated locations. During the peak visitation period - weekends and holidays in June through September - opportunities for solitude on the beaches of the Monomoy Wilderness Area are diminished as boaters and beach users concentrate at these sites. A possible impact of sunbathing and swimming is a temporary interruption of feeding or roosting behavior of migratory birds at the approach of beachgoers on foot or by boat. Once visitors get settled in their chosen spot on the beach, however, they tend to remain sedentary for long periods of time and migratory birds usually resume their activities just a short distance away. Other possible impacts of these activities include disrupting larval threatened beach tiger beetle populations, disrupting local seal populations, removing or trampling plants, creating new trails, littering, vandalism, and entering closed areas. Beach tents will not be allowed on North and South Monomoy, as their use in wilderness areas detracts from the wilderness experience that other visitors may be seeking.

On Monomoy Island, 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 or the unlawful entry of visitors into closed areas.

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, Roberton 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; 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 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 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).

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 sunbathing and swimming 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

Beachgoers 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.

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.

Sunbathing and swimming have the potential to lead to new unwanted trails on the refuge, and concentrated numbers of individuals increase the chances for beach littering and vandalism. Beachgoers could choose to take shortcuts to get to destinations rather than use the marked trail or the designated pedestrian travel corridors. Frequent use of alternative routes could lead to vegetation trampling, and ultimately, areas void of vegetation where the new travel route exists.

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 untrammeled 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 "leave them unimpaired for future use and enjoyment as wilderness."

Swimming and sunbathing will not detract from the character of wilderness, as long as beach tents and radios are not used in the wilderness area. Swimmers and sunbathers will not alter the natural scenic condition of the land and the use will not occur at a scale large enough to diminish the environment for native plants and animals. These activities can help individuals connect with nature and with wildlife. Given the few number of visitors at the refuge who engage in swimming and sunbathing within the wilderness area, we anticipate no negative impacts on wilderness character.

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

__X__ Use is compatible, with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

- All sunbathing and swimming will be done only in areas that are open to the public. 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.
- Beach tents will only be allowed on Morris Island.
- Loud radios will not be allowed on the refuge.
- Beaches will be monitored for signs of overuse and sections will be closed as needed.
- No physical items, including litter, will be placed or left on the refuge.
- Fires may not be set anywhere on the refuge, including beaches.
- All beach users 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.

JUSTIFICATION:

Allowing swimming and sunbathing will contribute to public appreciation of Monomoy NWR. Costs associated with administering these uses and likely visitor impacts are minimal. These uses will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purpose of the Monomoy NWR. Therefore, it is the determination of the Service that swimming and sunbathing use, at the discretion of the refuge manager, is a compatible use of the Monomoy NWR.

SIGNATURE:

Refuge Manager: _____ _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____ _____
(Signature) (Date)

MANDATORY 10 YEAR RE-EVALUATION DATE: _____

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COMPATIBILITY DETERMINATION

USE:

Waterfowl Hunting

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:

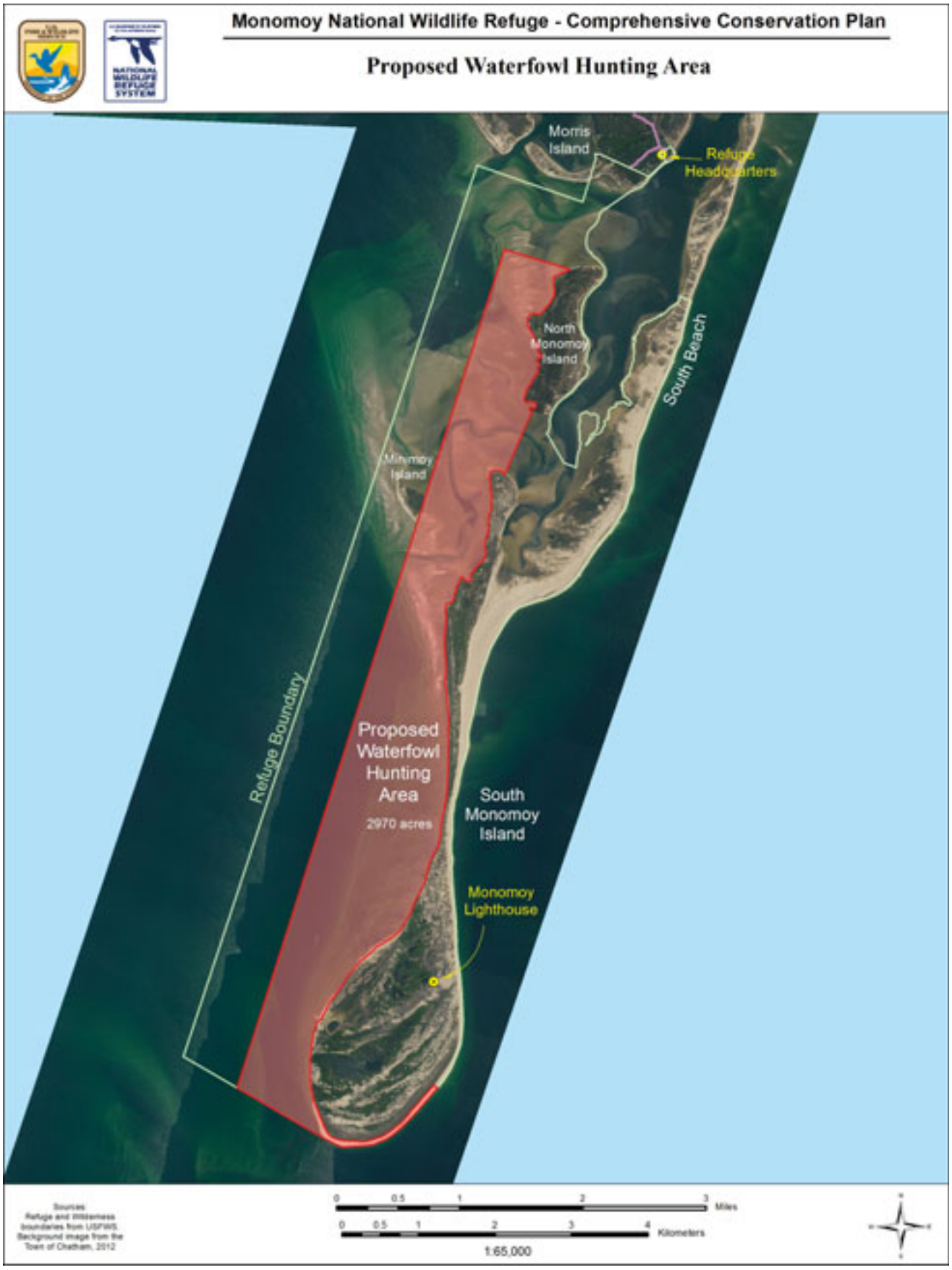
To administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use?
Hunting 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) and the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). This activity involves the taking of waterfowl including scaup (bluebill) and bufflehead, and sea duck species such as common eider, white-winged scoter, and black scoter.

(b) Where would the use be conducted?
Waterfowl hunting will only occur in designated areas within the Declaration of Taking open water boundary and certain portions of the western shoreline of north and south Monomoy, including Minimoy (map D.3). The hunting of any interior pond will not be permitted. Waterfowl hunting involves the use of calls and decoys to bring in waterfowl to a concealed hunter. Hunters may be on land facing out over the water or lying in a boat.

Map D.3. Monomoy National Wildlife Refuge Waterfowl Hunting Area



A boat is necessary when traveling to and from the hunting areas. No permanent blinds are allowed. Non-toxic shot is required.

(c) When would the use be conducted?
Waterfowl hunting activities will be conducted according to State regulations and restrictions. Commercial waterfowl guides are required to obtain a special use permit from the refuge prior to taking clients hunting on the refuge (50CFR 27.97)

(d) How would the use be conducted?
We would open no more than 40 percent of the refuge to waterfowl hunting, in accordance with the Migratory Bird Treaty Act (see map D.3). The hunt would also comply with refuge specific regulations outlined in 50CFR §32.40, and Massachusetts migratory bird regulations. Before opening the refuge to waterfowl hunting, we would need to complete other administrative procedures required for a new refuge hunt.

However, the refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting or further liberalize hunting regulations up to the limits of Federal and State regulations. We will restrict hunting if it becomes inconsistent with other, higher priority refuge programs or endangers refuge resources or public safety.

Access to the Monomoy NWR hunting area will be by boat only. Boaters will travel approximately 2 nautical miles to reach the hunting area from the nearest public boat launch and up to 8.5 nautical miles to reach the furthest point. On the west-facing shoreline, waterfowl hunters will have the option to hunt from land along the shoreline. All land-based hunting along the shoreline falls within the refuge's wilderness boundary. Waterfowl hunting does not detract from the refuge's wilderness character, and all waterfowl hunting activity will be conducted in accordance with the Wilderness Act.

All persons engaged in waterfowl hunting on Monomoy NWR must also adhere to the following refuge-specific regulations:

- Hunters must only possess approved nontoxic shot while in the field.
- Hunters are not allowed to construct pit or permanent blinds on the refuge.
- All temporary blinds, boats, and decoys must be removed from the refuge following each day's hunt. All trash, including shot shell hulls, must be removed when leaving hunting areas.
- Anyone hired to assist or guide hunter(s) must obtain, possess, and carry a valid special use permit issued by the refuge manager.
- The cutting, pulling, marking, or removing of vegetation is prohibited.
- Hunting dogs must be under the immediate control of the hunter at all times.
- Target practice on the refuge or any non-hunting discharge of firearms is prohibited.
- The use of air-thrust and water-thrust boats on all waters within the refuge boundaries is prohibited.
- Individuals will be required to obtain a hunt permit from 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. The National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57) identifies six legitimate and appropriate uses of wildlife refuges: hunting, environmental education, interpretation, fishing, wildlife observation and wildlife photography. These priority public uses depend on healthy wildlife populations. Where these uses are determined to be compatible, they are to receive enhanced consideration over other uses in planning and management.

We are proposing waterfowl hunting for scaup (bluebill) and bufflehead, and sea duck species such as common eider, white-winged scoter, and black scoter to provide the public with recreational opportunities identified as priority, wildlife-dependent, public uses of the System. Hunting has been a traditional form of recreation along the Cape Cod coastline and in the Nantucket Sound for generations.

Under Service policy, hunting is an acceptable, traditional form of recreation, particularly in areas that historically supported hunting. Waterfowl hunting by individuals has been occurring in the area for centuries, and in more recent years the area has become famed for commercial waterfowl hunting excursions. In order to manage this use on the refuge, it will need to become an officially allowable activity. We may modify hunting opportunities on the refuge for various reasons: considering wildlife populations, maintaining habitat, maintaining a safe and high-quality hunting experience or, in rare instances, protecting a research population.

AVAILABILITY OF RESOURCES:

The cost involved in offering this wildlife dependent activity is minimal. Hunting on the refuge will be administered by issuing an annual permit; there will be no fee for non-commercial recreational waterfowl hunting on the refuge, however, a permit will still be required.The refuge will be collecting an annual fee for the issuance of a Special Use Permit (SUP); the fee for each permit will be determined on a case by case basis using Service policy and manager discretion. In addition to staff expenses, the refuge will incur the costs of posting signs, maintaining vehicles, printing leaflets, and providing miscellaneous supplies. We will request the assistance, as needed, of Service or other authorized law enforcement personnel from federal, state, county or local agencies during the hunt. The collection fees will help improve the quality of the hunting program.

Maintenance of parking areas	$500
Law enforcement	$1,000
Signs / pamphlets	$2,000 ($1,000 after first season)
Administration	$1,000
Total recurring annual costs	**$4,500**

ANTICIPATED IMPACTS ON REFUGE PURPOSE:

Migratory birds are managed on a flyway basis. Hunting regulations are established in each state based on flyway data. Current numbers of such birds would be reduced, within allowable limits, as determined by State and Federal agencies. Direct disturbance to non-target birds would likely occur from hunting, but would be short-term. For example, noise from shotguns would cause some birds to flush and go elsewhere. These impacts are of a temporary nature and would also be reduced by the presence of adjacent refuge habitat where hunting does not occur, and where birds can feed and rest relatively undisturbed.

Potential refuge impacts include disturbing endangered species, trampling vegetation, and creating unauthorized trails and subsequent erosion. Discarded shotgun shells and other litter can impact the visual experience of refuge visitors. Enforcement issues involving hunting may also impact the refuge, including illegal taking of migratory birds (unauthorized species, over limit); although significant, these occurrences are uncommon. Commercial hunting, even with a refuge permit, may not take place in a designated wilderness area.

Human disturbance to migrating birds and other wildlife using the open waters and marshes on the Monomoy refuge will occur as a result of hunting activity. Migratory waterfowl generally minimize time in flight and maximize foraging time because flight requires considerably more energy than any other activity except egg laying. Human disturbance associated with hunting includes loud noises, such as those produced by shotguns, and rapid movements. This disturbance, especially when repeated over a period of time, can cause waterfowl to change food habits, feed only at night, lose weight, or desert feeding areas. These impacts from disturbance can be reduced by the presence of adjacent sanctuary areas allowing birds to feed and rest relatively undisturbed. Sanctuaries or non-hunt areas have been identified as the most common strategy to reduce disturbance caused

by hunting. Prolonged and extensive disturbances may cause large numbers of waterfowl to temporarily or permanently leave disturbed areas (Madsen 1995, Paulus 1984). Sanctuary areas are therefore very important to minimize disturbance to waterfowl populations and ensure their continued use of the refuge. The temporary impacts of waterfowl hunting are mitigated by the presence of adjacent refuge habitat where hunting does not occur, where birds can feed and rest undisturbed. Refuge regulations ensure that areas of inviolate sanctuary remain free of disturbance throughout the season.

Boating activity associated with hunting during the fall and winter can alter distribution, reduce use of particular habitats or entire areas by waterfowl and other birds, alter feeding behavior and nutritional status, and cause premature departure from areas (Knight and Cole 1995). Boating and hunter activity will also cause some level of soil disturbance, erosion, and foot traffic in sensitive marsh habitats, among other physical effects. Specifying the use of nonmotorized boats, which leave virtually no wake, and limiting the number of hunters will serve to help reduce these impacts.

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

__X__ Use is compatible, with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

Law enforcement patrols of public use areas will minimize the above-mentioned types of violations. Staff will monitor hunting activities to determine any adverse impacts to refuge resources and adjust the hunt program as necessary.

Hunters must abide by all applicable refuge, State, and Federal regulations and have in possession all necessary refuge-issued permits. Commercial guides must follow the conditions outlined in the special use permit. These conditions would detail, for example, the primary boat to be used, and in what area of the refuge hunting would take place. Refuge staff will develop a hunt plan and amend the Code of Federal Regulations before permitting hunting on the refuge. No bait or electronic calls can be used for the taking of waterfowl. Cutting vegetation is prohibited. The use of unleashed dogs is permitted only while under the control of individuals actively engaged in hunting. At the end of each hunt, all decoys, blinds, and other equipment must be removed. All litter will be removed daily.

JUSTIFICATION:

The National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd et seq.) identifies six legitimate and appropriate uses of wildlife refuges: environmental education, interpretation, hunting, fishing, wildlife observation and wildlife photography. These priority public uses depend on healthy wildlife populations. Where these uses are determined to be compatible, they are to receive enhanced consideration over other uses in planning and management.

Waterfowl hunting helps us achieve refuge purposes and management goals and objectives, as outlined in refuge comprehensive conservation plans. In addition, waterfowl hunting in these areas is an historic, traditional and sustainable activity. Traditional consumptive uses such as hunting and fishing have a historical significance on Cape Cod, especially in the Chatham area, and there are still those in the area who make their living from the land. This culture of sustainability necessitates a strong connection to the environment. The refuge is vital to this culture and a significant part of the community. The refuge would like to provide the opportunity for waterfowl hunters to hunt on certain areas of the refuge. Hunting of waterfowl at Monomoy NWR is justified within refuge objectives by providing wildlife-oriented recreation and promoting appreciation of wildlife and the outdoors.

These activities will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established

SIGNATURE:

Refuge Manager: _____ _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____ _____
(Signature) (Date)

MANDATORY 15 YEAR RE-EVALUATION DATE: _____

LITERATURE CITED:

Knight, R.L. and D.N. Cole. 1995. Wildlife responses to recreationists. In Wildlife and Recreationists (R. L. Knight and K. J. Gutzwiller, eds.). Island Press, Covelo, California.

Madsen, J. 1995. Impacts of disturbance on migratory waterfowl. Ibis 137: S67-S74.

Paulus, S.L. 1984. Activity budgets of nonbreeding gadwalls in Louisiana. Journal of Wildlife Management 48: 371-380.

COMPATIBILITY DETERMINATION

USE:

Wildlife Observation 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 uses are wildlife observation and photography. Wildlife observation and photography 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).

(b) Where would the use be conducted?
Certain areas on Monomoy NWR are seasonally closed to public access from April 15 to September 15 to protect sensitive habitats or species of concern. Refuge staff prepare a closed areas map each April and make it available to the public on the refuge Web site, inside the refuge visitor contact station, and at the Morris Island Trail kiosk.

Wildlife observation and photography can be conducted on Monomoy NWR anywhere that is open for public use. On Morris Island, these uses will occur on the Morris Island Interpretive Trail, at overlooks, and along the beach, including the ¾ mile Morris Island Trail. The trail begins near the refuge headquarters/visitor contact station, goes along the top of the coastal bluff, and down a steep set of stairs to the beach, then through the sand dunes and along salt marshes and salt ponds. The public is asked to remain on this trail.

There are no official trails on North Monomoy Island, although there is a corridor crossing the island. On South Monomoy, there are no official trails, although there are paths that have been created over time by visitors or staff conducting management actions. Because these areas are part of the nationally designated wilderness area, these trails are not maintained, and except for seasonal closures, visitors are free to walk anywhere they wish to engage in wildlife observation or photography.

(c) When would the use be conducted?
Wildlife observation and photography would occur year-round, peaking during May 15 to October 15, during daylight hours when the refuge is otherwise open for public use, ½ hour before sunrise to ½ hour after sunset. Some activities may be allowed during non-daylight hours when the refuge is otherwise closed to public use under special use permit or in conjunction with refuge staff-led or volunteer-led programs.

(d) How would the use be conducted?
Visitors engaged in wildlife observation and photography tend to do so individually or in small groups, with the exception of outings by birding and photography clubs, which often have 20 or more participants in organized field trips to the refuge. Birders access both South Beach, which is owned by the Town of Chatham and managed as part of the Cape Cod National Seashore, as well as North Monomoy Island and South Monomoy. Due to the constant geomorphological changes that occur in this area, opportunities for excellent wildlife observation and photography can be found in both areas, with one area providing more opportunities than another at any given time. Most birders and photographers who depart from Morris Island will go to both South Beach and North and South Monomoy on their trip.

Access to refuge areas other than Morris Island will be by commercial ferry, motorized boat, or nonmotorized boat. Once on refuge lands, all access for wildlife observation and photography activities will be on foot. Motorized equipment is not allowed within the Monomoy Wilderness, which encompasses the more remote portions of Monomoy NWR and includes the majority of the refuge's lands. The Morris Island portion of Monomoy NWR is accessible by motor vehicles and bicycles and parking is provided. However, outside the refuge parking lot, no motorized vehicle or bicycle operation is permitted.

In general, wildlife observation and photography activities will be self-guided. Commercial photography requires a special use permit. Refuge staff do not maintain trails in the Monomoy Wilderness for public use. Staff will focus maintenance efforts on the Morris Island Interpretive Trail and existing and future structures on Morris Island. Currently, there is one observation and photography platform and a coastal bluff viewing area. There is also a short boardwalk at the beginning of the Morris Island Trail, which leads to an overlook and a tiered stairway. The stairway leads visitors to the shoreline and offers high-quality visibility of North Monomoy Island and South Monomoy and has a bench for resting. All these existing structures must be maintained annually. There is a new observation platform and photography blind proposed for some point along the Morris Island Interpretive Trail.

New permanent human-made structures are not permitted within wilderness, and in keeping with preserving and protecting wilderness values, none are planned, except for the Morris Island non-wilderness portion of Monomoy NWR. Portable, temporary blinds are allowed in open areas of the refuge provided they are not left standing when unattended or unoccupied.

(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.

The wildlife observation and photography programs promote refuge purposes and management objectives and increase public knowledge and understanding of wildlife and the importance of habitat protection and management. Refuge visitors who participate in wildlife observation and photography will gain an understanding of the missions of the Service, the National Wildlife Refuge System, and the contribution of the Monomoy NWR to this system.

AVAILABILITY OF RESOURCES:

Wildlife observation and photography currently occur with existing staff, but will be enhanced with the provision of new structures and staff. Monomoy NWR has long been one of the premier birding and photography sites in Massachusetts. Maintaining this reputation has more to do with the physical characteristics of Monomoy and South Beach and how the habitat changes with changes in geomorphology than it does with the existence of refuge staff and infrastructure. However, improvements in the quality of the programs will be realized with the construction of new facilities on Morris Island and two new staff positions, a portion of which will support the Monomoy NWR public use program.

New construction and renovation/estimated costs:			
Observation platform – install new, handicapped accessible platform			$15,000
Morris Island Trail photography blind—1 new			$5,000
Total new costs:			**$20,000**
Recurring annual costs:			
Regular maintenance of platforms, photo blinds, trails			$5,000
Equipment and supplies			$5,000
GS-11 Visitor Services Manager	1 staff	160 hours	$7,200
GS-9 Visitor Services Specialist	1 staff	120 hours	$4,500
WG-6 Maintenance Worker	1 staff	320 hours	$9,600
GS-11 Law Enforcement	1 staff	160 hours	$7,200
Total recurring annual costs:			**$38,500**

ANTICIPATED IMPACTS OF THE USE:

The majority of the impact from wildlife observation and photography will be disturbance to resting, feeding or nesting migratory birds and resting seals. There will be some trampling of vegetation. Incidences of littering, vegetation removal, and vandalism may increase as a result of the projected increase in visitation. 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.

New structures will be located on the Morris Island Interpretive Trail 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.

Visitors engaged in wildlife observation and photography have a vested interest in minimizing disturbance to the wildlife they wish to observe and photograph. However, birders and photographers are known to disturb wildlife in an attempt to get closer looks at the objects of their attention. 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. 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, Roberton 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: 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).

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. Refuge staff will manage wildlife observation and photographer access via seasonal closures to minimize disturbance to nesting, resting, and foraging waterbirds on the refuge.

Visitors accessing Monomoy NWR 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. A 150-foot buffer zone around all seals is 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 and roosting shorebirds. Impacts of wildlife observation and photography 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. 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.

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 untrammeled 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."

Wildlife observation and photography 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 wilderness visitors and will be regulated through the special use permit required for large groups.

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

__X__ Use is compatible, with the following stipulations

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:

All wildlife observation 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 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.

Access for wildlife observation and photography activities will be on foot, or by ferry, boat, and sea kayak. No motorized vehicles will be allowed on the refuge and in the wilderness areas.

Activities will be in public areas only (unless a special use permit is approved) where only minimal direct and short-term impacts are predicted, and adverse, long-term, cumulative impacts are not anticipated.

Periodic evaluations will be done to insure that visitors are not causing unacceptable adverse impacts. If we have evidence of unacceptable impacts occurring, we will modify or curtail access 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 observation and photography. These restrictions will be maintained. Refuge regulations will be posted and enforced.

All photographers must follow refuge regulations. On a case by case basis, photographers may be issued a special use permit to photograph inside closed areas. 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 appropriately to reduce disturbance to wildlife.

JUSTIFICATION:

Wildlife observation and photography are priority, wildlife-dependent, public uses identified by the 1997 Refuge Improvement Act. By definition, 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.

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 facilitate wildlife observation and photography, and will provide compatible recreational opportunities for visitors to observe and learn about wildlife and habitats firsthand.

SIGNATURE:

Refuge Manager: _____ _____
(Signature) (Date)

CONCURRENCE:

Regional Chief: _____ _____
(Signature) (Date)

MANDATORY 15 YEAR RE-EVALUATION DATE: _____

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