

# APPENDIX D: Draft Wilderness Stewardship Plan



2014

## **Draft** -Wilderness Stewardship Plan and Backcountry Camping Policy Otis Pike Fire Island High Dune Wilderness



National Park Service  
**Fire Island National Seashore**

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

**TABLE OF CONTENTS**

I. PURPOSE AND NEED.....	
II. INTRODUCTION.....	
III. WILDERNESS-BACKCOUNTRY DESCRIPTION.....	
A. General Boundary Description .....	
B. Wilderness Character .....	
Untrammeled Quality.....	
Natural Quality.....	
Undeveloped Quality.....	
Opportunities for Solitude or Primitive and Unconfined Recreation Quality.....	
Cultural Resources.....	
Wilderness Character Monitoring.....	
C. Potential Wilderness Additions .....	
D. Backcountry Description.....	
IV. WILDERNESS USE .....	
A. Day Use .....	
B. Hunting.....	
C. Overnight Use: Wilderness and Backcountry camping.....	
D. Scientific Activities.....	
V. WILDERNESS MANAGEMENT.....	
A. Minimum Requirements Analysis.....	
B. Potential Wilderness Additions.....	
C. Utility Companies.....	
D. Commercial Services.....	
E. State and Local Agencies.....	
F. Restoration.....	
G. Fire Management.....	
H. Wildlife and Vegetation Management.....	
I. Interpretation and Education.....	
VI. MANAGEMENT FACILITIES .....	
A. Roads, Trails, and Vehicle Cuts.....	
B. Pedestrian Dune Crossings.....	
C. Signs.....	
D. Navigational Aids.....	
E. Fire Island Wilderness Visitor Center.....	
VII. APPENDICES.....	
A. Fire Island National Seashore Enabling Legislation.....	
B. Otis Pike Fire Island High Dune Wilderness Enabling Legislation.....	
C. Map of the Otis Pike Fire Island High Dune Wilderness.....	
D. Monitoring Trends in Wilderness Character of the Otis Pike Fire Island High Dune Wilderness.....	

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

**I. PURPOSE AND NEED**

The purpose of this Wilderness Stewardship Plan (WSP) and Backcountry Camping Policy is to guide Fire Island National Seashore (the Seashore) in making decisions regarding the future use and protection of the congressionally designated Otis Pike Fire Island High Dune Wilderness (the Fire Island Wilderness) and areas adjacent to the wilderness that are designated backcountry camping areas.

This plan revises and updates the 1983 Wilderness Management Plan, incorporating elements of the National Park Service (NPS) Wilderness Education and Partnership Plan (June 6, 2002) and the NPS Wilderness Stewardship Plan Handbook (August 11, 2004). It identifies the core qualities of wilderness character and outlines the framework through which the Fire Island Wilderness can be preserved, consistent with law, policy, and the specific legislative history applicable to this wilderness. It also revises the 2011 Fire Island National Seashore Interim Backcountry Camping Policy

Section 2(a) of the 1964 Wilderness Act states that 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...” The Wilderness Act further acknowledges agency responsibility to preserve wilderness character in section 4(b), Use of Wilderness Areas. National Park Service (NPS) policy contributes to the need for this plan by mandating that “In addition to managing these areas for the preservation of the physical wilderness resources, planning for these areas must ensure that the wilderness character is likewise preserved” (2006 Management Policies, 6.3).

The Fire Island Wilderness therefore is managed such that “the earth and its community of life are untrammelled by man,” and “to preserve its natural conditions.” The preservation of wilderness character and values includes providing “outstanding opportunities for solitude or a primitive and unconfined type of recreation,” with “the imprint of man’s work substantially unnoticeable.” Activities to achieve other legal purposes of the area within the designated wilderness will be administered so as to preserve its wilderness character.

**Definitions****from Director’s Order #41: Wilderness Preservation and Management**

**Backcountry:** The National Park Service uses the term “backcountry” to refer to primitive, undeveloped portions of parks. “Backcountry” is not the same as “wilderness,” and is not a specific management zone. Rather, it refers to a general condition of land that may occur in zones outside wilderness. Wilderness and backcountry may require different administrative practices because the Wilderness Act imposes additional conditions and constraints.

**Designated Wilderness:** Federal land designated by Congress as a wilderness area and a component of the National Wilderness Preservation System, where NPS is required to manage according to the Wilderness Act of 1964.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

**II. INTRODUCTION**

On September 3, 1964, the United States Congress passed the Public Law 88-577, known as the “Wilderness Act,” which established a National Wilderness Preservation System to be composed of federally owned land set aside “to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.” Congressional designation of wilderness areas assures the long-term protection of wild and undeveloped federal lands. On September 11, 1964, eight days after the passage of the Wilderness Act, Congress passed Public Law 88-587 establishing the Fire Island National Seashore (referred to here as the Seashore) “for the purpose of conserving and preserving for the use of future generations certain relatively unspoiled and undeveloped beaches, dunes, and other natural features... Which possess high value to the Nation as an example of unspoiled areas of great beauty in close proximity to large concentrations of urban population.”

The Seashore’s enabling legislation refers to a section of the Seashore lying between the easterly boundary of Davis Park and the westerly boundary of Smith Point County Park, commonly known as the “8-mil zone” that will be accessible by “ferry and footpath only” and “no development or plan for the conveniences of visitor shall be undertaken therein which would be incompatible with the preservation of the flora and fauna or the physiographic conditions now prevailing and every effort shall be exerted to maintain and preserve this section of the Seashore... in as nearly [its] present state and condition as possible.” A copy of the Seashore’s enabling legislation is included in appendix A. The emphasis throughout this Act is clearly the perpetuation of the values of unspoiled natural areas within proximity of one of the largest and most highly urbanized regions in the world.

With the passage of the Eastern Wilderness Act (Public Law 96-622) in 1975, Congress created 16 new wilderness areas to be included in the National Wilderness Preservation System and directed the National Park Service to study, designate, and preserve areas in the eastern portions of the country as wilderness. The Act states, “areas of wilderness in the more populous eastern half of the United States are increasingly threatened by the pressures of a growing and more mobile population, large-scale industrial and economic growth, and development and uses inconsistent with the protection, maintenance, and enhancement of the areas’ wilderness character.” This Act allows for areas where the landscape was once affected by the influence of humans to be reconstituted to their natural state and be designated as wilderness.

The General Management Plan for the Seashore approved in 1978 stated that the “8-mile zone” would be managed as a primitive zone called the High Dune Management Unit. The plan also requested that the National Park Service review the lands within this area to determine their suitability for inclusion in the National Wilderness Preservation System.

On December 23, 1980, Congress passed Public Law 96-585 establishing Otis Pike Fire Island High Dunes Wilderness, comprising approximately 1,380 acres of the Seashore. Approximately 1,363 acres were designated as wilderness in 1980, and 18 more acres were identified as potential wilderness additions. The Fire Island Wilderness is distinct, as it is the smallest wilderness managed by the National Park Service and the only federally designated wilderness in New York State. The establishment of the wilderness is the culmination of previous legislative and management direction to preserve and maintain this section of the Seashore in a primitive and natural state.

When the Seashore completed the 1983 Wilderness Management Plan, the Fire Island Wilderness included an NPS horse barn, 20 other structures occupied by reserved rights holders (one at Old Inlet, 12 at Whalehouse

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

Point, and seven at Long Cove, all of which expired in 1992), and a network of off-road vehicle trails called Burma Road. With a few exceptions authorized by the Fire Island Wilderness legislation, the structures and facilities that were in the area at the time of designation and that were incompatible with wilderness have been removed, the uses and activities inconsistent with wilderness have ended, and the area has largely been restored to its natural state.

Following the removal of previous incompatible uses, 17 additional acres of land were designated wilderness in 1999 under a Federal Register Notice. Since 1999 there remained approximately one acre of potential wilderness additions within Fire Island National Seashore. In 2014 this one acre was designated as wilderness through a Federal Register notice. (See Section VI. C. for a brief description of the location and management intentions for these Wilderness additions.)

In 2006 the National Park Service, in preparation for the park's new General Management Plan (GMP), conducted a series of dialogues on critical park and community issues. One of the issues discussed was the need for a new Wilderness Management Plan. Early in the GMP process, the National Park Service decided that a Wilderness Stewardship Plan would be developed and would be approved as part of the GMP.

In 2011 the park established an Interim Backcountry Camping Policy to be implemented for the Fire Island Wilderness and on adjacent portions of the Atlantic Ocean Beach of Fire Island. This policy was based on the approved November 1983 Wilderness Management Plan for FIIS and constituted an amendment of the 1984 FIIS Wilderness Camping Policy, addressing current human health and safety issues for the visitor and staff, natural resource management concerns, and increased demand for use of the area. This policy simultaneously minimized human impact on resources and provided for a safe, high-quality backcountry experience.

### III. BACKCOUNTRY/WILDERNESS DESCRIPTION

At Fire Island National Seashore, the backcountry is in the eastern portion of the park and stretches from the eastern boundary at Watch Hill east to the Wilderness Visitor Center. It includes the land up to mean high tide on the Great South Bay and the lands (sandy beach) down to mean high tide on the Atlantic shoreline, inclusive of the Fire Island High Dune Wilderness.

The Fire Island Wilderness is a portion of the backcountry and is located in this same area, with the designated wilderness boundary being the toe of the dune on the south/Atlantic Ocean shoreline and mean high tide line on the north Great South Bay shoreline.

There is an ocean-to-bay parcel of non-federally owned land, Bellport Beach, which lies roughly in the middle of the Wilderness. Bellport Beach separates the Wilderness into Eastern and Western segments. For backcountry camping purposes, portions of the Atlantic Ocean Beach on Fire Island that lie to the south of the eastern and western camping zones defined within the Fire Island Wilderness are also designated for overnight use. (A Wilderness Map is included in Appendix C.)

#### A . General Boundary Description

**Western Segment:** This segment's western boundary extends along the easternmost edge of the Watch Hill Campground and nature trail. The western boundary connects to the southern boundary, legislatively defined as "the toe of the primary dune," which in turn runs along the Atlantic Ocean Beach until it intersects the eastern boundary. The beach adjacent to this southern boundary is the area designated as park backcountry. The eastern boundary coincides with the western boundary of Bellport Beach, a village-owned facility excluded from

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

Wilderness designation. This mutual boundary extends from the toe of the primary dune to the shore line of the Great South Bay at mean high water. The northern boundary extends along the Great South Bay at mean high water and intersects the western boundary described above.

**Eastern Segment:** This segment's western boundary coincides with the eastern boundary of Bellport Beach and extends from the Great South Bay at mean high water on the north to the toe of the primary dune on the south. The southern boundary extends along the toe of the dune from this point until it generally coincides with the western boundary of the Smith Point County Park. The Atlantic Ocean beach adjacent to this southern boundary is the area designated as park backcountry. The eastern boundary of the Wilderness extends along the western boundary of Smith Point County Park between the toe of the primary dune on the south and the Great South Bay at mean high water on the north, except that it excludes the existing Wilderness Visitor Center and the 100 feet of land surrounding the perimeter of the building. The northern boundary extends along the Great South Bay at mean high water from the Smith Point County Park on the east until it coincides with the eastern boundary of the Bellport Beach, as previously described.

Due to the dynamic nature of the shifting dunes, salt marshes, and barrier island shorelines, both the southern and northern boundaries are subject to frequent fluctuation. Where there is an overwash, break in the dunes, breach, etc., the Fire Island Wilderness will be managed as if the boundary extended to the toe of the dunes on either side of the break. For a more precise description of the Fire Island Wilderness boundary, please refer to the detailed boundary map in Appendix C.

### B. Potential Wilderness Additions

Following the 1980 wilderness study, a recommendation was forwarded to the Congress by the President that identified some lands within the Seashore as "potential" wilderness for future designation when the nonconforming use has been removed or eliminated. If authorized by Congress, potential wilderness areas will become designated wilderness upon the Department of Interior Secretary's determination and publication in the Federal Register<sup>1</sup>.

Two areas within the Fire Island Wilderness had facilities that were deemed incompatible with wilderness designation and were classified as Potential Wilderness Additions. They no longer contain the incompatible facilities and therefore were added to designated wilderness upon notification in the Federal Register by the Secretary of the Interior.

See Section VI. C. for a brief description of the location and management intentions for these potential wilderness additions.

## IV. WILDERNESS-BACKCOUNTRY USE

Wilderness is described in the Wilderness Act as an area "where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain." The visitor must accept wilderness largely on its own terms. Modern conveniences are not provided for the comfort of the visitor; and the risks of wilderness travel, of possible dangers from accidents, wildlife, and natural phenomena must be accepted as part of the wilderness experience.

The 2011 Backcountry Camping Policy addressed the current demand for use of the area, natural resource management concerns, and increased human health and safety issues for the visitor and staff. This interim policy

<sup>1</sup> [www.wilderness.net](http://www.wilderness.net); National Park Service Wilderness Designation Process

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

is now integrated into this plan, which will simultaneously minimize human impact on resources and provide for a safe, quality backcountry experience.

In 1984, a primitive or wilderness camping policy was established for the Seashore by a team of experienced backpackers, park planners, and resource managers who also established backcountry permit levels, developed regulatory and safety pamphlets, and implemented monitoring techniques. Dispersed individual camping levels (no more than 24 campers per night, with a maximum of 8 per group in the West Zone, and no more than 12 campers per night with a maximum group size of 4 in the East Zone, equating to 36 campers per night total) only slightly exceeded the levels originally proposed in the 1978 GMP for camping at Old Inlet (two 15-person-capacity primitive camping areas with a total of 30 campers per night). These limits have been in place since 1984 and have seldom been met or exceeded on a nightly basis, with exception of holiday weekend dates during spring through early fall; the annual camper visitation count is always far less than the originally proposed figure.

The 1978 GMP states that day-use visitation at Old Inlet was projected to be 320 and at Smith Point West was projected to be 2,500 people on the beach. The current Monthly Public Use Report (MPUR) visitation figures for the East District and Wilderness Visitor Center have shown that actual visitation is far less than what was proposed as a maximum capacity. (See Appendix A.)

Traditional visitor use in the “High Dune Management Unit” prior to wilderness designation included day hiking, sunbathing, limited camping and backpacking, and regulated hunting. All of these activities have continued under additional regulation since the Fire Island Wilderness was designated and are monitored through random and recurring patrols conducted by visitor and resource protection park rangers. Camping was limited to behind the primary dune due to safety concerns related to mixing beachfront camping use with seasonally permitted off-road driving on the beach front.

From 2008 to 2010, Seashore staff permitted camping on the Atlantic Ocean beach in front of the Fire Island Wilderness as well as in the wilderness area. The 2008 Draft Superintendent’s Compendium for Fire Island National Seashore included the establishment of optional backcountry camping on the Atlantic Ocean beach in front of the Fire Island Wilderness from March 15 through Labor Day. In 2009, discussion of developing a wilderness character monitoring program was initiated by Seashore resource management and visitor and resource protection staff to identify and measure the four qualities of wilderness character as defined by the Wilderness Act for Fire Island Wilderness. After three summers of monitoring camping on the beach in addition to camping in the designated wilderness, Seashore staff documented minimal adverse impacts to area resources.

Backcountry camping use at Fire Island National Seashore has gradually increased over the years. A growing awareness of the availability of Fire Island Wilderness backcountry camping is attributed to promotion on the internet (Recreation.gov), print media, word of mouth, and most recently through social media.

Fire Island National Seashore’s 2011 revised backcountry camping policy addressed issues of personal health and safety and visitor satisfaction by extending backcountry camping to the Atlantic Ocean beach in front of each wilderness zone. Allowing for camping on the beach during the specified dates (instead of behind the dunes as required in the 1984 wilderness camping policy) reduces exposure to mosquitoes and ticks among both campers and Seashore staff who must monitor campers. Campers may select a beach campsite when off-road vehicle (ORV) driving is suspended for protection of nesting shorebird species, which is March 15 through Labor Day. This is also the period when ticks and mosquitoes are most active. Every camper will be alerted to precautions that must be taken to protect threatened and endangered species.



## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

### A. Access to Fire Island Wilderness and adjacent Great South Beach

The only method of access for camping in the Fire Island Wilderness or the adjacent Atlantic Ocean Beach is by foot. Transportation up to the backcountry areas and wilderness boundaries can be accomplished in a variety of ways.

- Ferry transportation is available seasonally from Patchogue to Watch Hill, where one can hike to camping areas on the Atlantic Ocean Beach or via remnants of the Burma Road.
- Parking by special permit is available at the Wilderness Visitor Center, where one can hike in along the Atlantic Ocean Beach or via remnants of the Burma Road.
- Public transportation is available via the Long Island Railroad (LIRR) to Patchogue or Mastic/Shirley. Suffolk County Transit System provides bus service to Patchogue and to Smith Point County Park, adjacent to the Wilderness Visitor Center.
- When a breach exists in the wilderness, access to each camping zone may not be possible from either the east or west access route, depending upon the location of the breach.
- Visitors can access the wilderness boundary via boat from the Great South Bay. Campers must obtain a backcountry camping permit in advance. Non-motorized craft such as canoes and kayaks may be hauled/pulled up onto the bayside shoreline. Motorized vessels would need to be anchored off shore.

To enter the Fire Island Wilderness, campers can use either established dune crossings, low areas in the dune line, deer trails, or breaks in the marsh vegetation along the bay. Areas closed to protect Threatened and Endangered Species are marked by symbolic fencing and are closed to the public. Campers must avoid entering those areas marked by rope and closure signs. ORVs are not permitted to transport visitors and equipment to access the Fire Island Wilderness along the Atlantic Ocean Beach for the purpose of camping.

National Seashore staff will monitor the impacts of overnight use on wilderness character. The number of campers and permits may be reduced or adjusted as the conditions of the Wilderness and its fauna and flora (e.g., threatened and endangered species) change. The number of overnight stays will not be increased without appropriate public review and environmental compliance. Resource Management and Visitor and Resource Protection staff will work together to determine whether additional areas should be closed to camping or whether camping zone boundaries should change. Specific policies regarding overnight use will be determined in the Fire Island National Seashore Backcountry Camping Policy or through the Superintendent's Compendium.

### B. Day Use

Some of the primary uses of the Fire Island Wilderness include hiking and sunbathing. Horseback riding may be considered in the future by permit, but will need to be evaluated and monitored for resource impacts. Collecting of specified quantities of beach plums and blueberries occurs and is allowed throughout the park by Superintendent's Compendium designation, including within the Fire Island Wilderness. Some traditional use occurs by the Shinnecock and Unkechaug tribes. The Seashore will work with native tribes to accommodate traditional uses in wilderness, including collecting and ceremonial activities.

### C. Hunting

Hunting within Fire Island National Seashore is authorized by the Seashore's enabling legislation, is in accordance with New York State law, and is regulated in the area by the Superintendent's Compendium. Hunters are required



## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

to obtain an NPS hunting permit. Currently, only waterfowl hunting is permitted; however, other types of hunting may be permitted in the future pending evaluation of resource impacts.

### D. Overnight Use: Wilderness /Backcountry Camping

All backcountry camping at Fire Island National Seashore is primitive camping, defined as an overnight stay by which access is gained by foot and where facilities are minimal. The park offers a primitive and unconfined recreation experience in its backcountry and wilderness camping areas.



Wilderness Campsite

On Long Island, primitive camping in a wilderness setting is presently available only at Fire Island National Seashore. The Seashore permits primitive/dispersed camping, in which campers may choose their own campsites within one of two wilderness zones. The two zones are generally described below, although in the event of a breach, multiple breaches, or other natural events that in some way necessitate changing the camping zones and their capacities, the Seashore will adjust the camping zone/capacity descriptions and the camping areas, as appropriate. Although established campsites exist at Watch Hill

and Smith Point County Park, both adjacent to the NPS-designated wilderness, these are not primitive camping venues.

#### Eastern Camping Zone

The Eastern zone begins approximately 1.75 miles west of the Smith Point Wilderness Visitor Center (about 1,000 feet west of the initial location of the Old Inlet Breach created by Superstorm Sandy in 2012) and stretches to 1,000 feet east of the Bellport Beach boardwalk/trail. Campsites may be selected north of the primary dune line year-round, or on the beach from March 15 through Labor Day.

##### Camping Capacity

- a. The maximum number of campers permitted to camp in the eastern zone at any one time is 12.
- b. The maximum number of campers allowed in one camping group at one campsite is 4.
- c. Maximum length of stay is three consecutive nights.

#### Western Camping Zone

The Western zone extends 1,000 feet west of the Bellport Beach boardwalk/trail to Long Cove (approximately 1 mile east of the eastern most beach access at Watch Hill). Campsites may be selected north of the primary dune line year-round, or on the beach from March 15 through Labor Day.

##### Camping Capacity

- a. The maximum number of campers permitted in the western zone at any one time is 24.
- b. The maximum number of campers allowed in one camping group at one campsite is 8.
- c. Maximum length of stay is three consecutive nights.

The primary dunes, other ecologically sensitive areas, and areas marked by symbolic fencing for threatened and endangered species are closed to all access, including camping. The zones and camper numbers will be evaluated annually, and camper numbers may be re-evaluated and revised based on impacts to the resources and other factors.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

**E. Scientific Activities**

Science and research are a stated purpose of wilderness and are essential for its preservation, as it can help provide a scientific basis for planning, operations, management, education, and interpretive activities.

Scientific activities will be encouraged in the Fire Island Wilderness, provided that the benefits of what may be learned outweigh the negative impacts on wilderness character. Managers need to be aware of and guard against cumulative impacts on both the resource and overall wilderness character that may result from scientific research over time. Fire Island National Seashore will ensure that researchers understand that the conduct of their research should be in accord with the preservation of wilderness character. Evaluation of applications for research and other scientific work in National Park Service wilderness should first determine that the research cannot be conducted outside the wilderness boundary, confirm that it demonstrates a positive benefit to wilderness character, and include a minimum requirements analysis (utilizing the appropriate Minimum Requirements Decision Guide-MRDG) of the project's methodologies. Researchers will be required to remove any installations immediately following the conclusion of their use.

**V. Wilderness Character**

Approximately 60 miles away from New York City's Times Square lies a unique haven, the Fire Island Wilderness, which has been afforded the highest level of protection by Congress. A strong vitality and dynamism is paradoxically integral to this respite from city life. Waves tumble tremendous quantities of sand upon Fire Island daily. Even the dunes themselves are on the move, shifting with the wind. Salt marshes teem with life along the fringes of the bay, and nesting shorebirds seek refuge among the dunes and washovers, always keeping a watchful eye out for predators. White-tailed deer travel quietly through the area and are as startled by people as people are by them. Here visitors can escape urban pressures and wander for miles through rolling dunes and native grasses to hear the rhythmic roar of the waves and enjoy uninterrupted views of sand, scrub, and sea. In the Fire Island Wilderness, forces of nature are allowed to take their course, creating a refuge for wildlife and people alike.

To preserve the unique spirit of each wilderness, Congress passed the 1964 Wilderness Act. Although not explicitly defined within the Act, wilderness character can be described as the combination of biophysical, experiential, and symbolic ideals that distinguishes wilderness from other lands. These ideals combine to form a complex and subtle set of relationships among the land, its management, its users, and the meanings people associate with the land. The following section discusses the wilderness character of the Fire Island Wilderness and describes what is distinctive and special about this place, as well as highlighting issues that could be addressed to preserve wilderness character. For the purpose of monitoring and managing wilderness responsibly, an interagency team developed a national framework in 2008, using four main qualities derived from the language of the Wilderness Act. These four qualities are equally important and must be thoughtfully considered in all decisions made affecting the wilderness:

Untrammeled: Wilderness is essentially unhindered and free from modern human control or manipulation

Natural: Wilderness maintains ecological systems that are substantially free from the effects of modern civilization

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

Undeveloped: Wilderness retains its primeval character and influence and is essentially without permanent improvements or modern human occupation

Opportunities for Solitude or Primitive and Unconfined Recreation: Wilderness provides outstanding opportunities for remoteness from sights and sounds of people and modified areas, for self-reliant recreation, and freedom from restrictions on visitor behavior

### The Untrammelled Quality

The untrammelled quality of the Fire Island Wilderness is most evident in the prevailing force of the wind and waves, perhaps the most fundamental and vital process in the geomorphology of Fire Island. Massive dunes are constantly shifting, along with the island itself. Due to the removal of former residential structures and other developments, the natural vegetation has been allowed to reclaim the landscape, returning it to a truly wild place. Now the Fire Island Wilderness thoroughly “appears to have been affected primarily by the forces of nature,” and the “earth and its community of life are untrammelled by man.” As “trammel” refers to a restraint for a horse, untrammelled in the wilderness sense connotes an area that is unhindered by modern people. A noticeable lack of signs and structures in the wilderness supports this quality, which could also be said to represent the “wild” in wilderness. Any intentional or unintentional, authorized or unauthorized treatment or action that manipulates a wilderness is a hindrance by modern people and therefore impairs this quality.

Perpetuating the untrammelled quality requires managers to restrain themselves, rather than restraining the wilderness. There are no designated campsites in the Fire Island Wilderness; trailheads are cleared and prominent, but trails through the wilderness are minimally maintained; and minimal signage is provided. Upholding the untrammelled quality can often detract from another wilderness quality, such as naturalness, or vice-versa. For example, non-native invasive species may be removed in order to attain natural species composition, which would in turn be a manipulation of the current wilderness.

The most common actions that detract from the untrammelled quality in the Fire Island Wilderness are authorized management actions such as the removal of non-native invasive plant species, including the Japanese black pine (*Pinus thunbergii*) and autumn olive (*Elaeagnus umbellata*). However, the removal of non-native invasive plants and the reintroduction of their native counterparts would perhaps have a longer-term positive effect on the natural quality of the wilderness. Similarly, the suppression of naturally ignited fires would also detract from the untrammelled quality.

### Natural Quality

The southern boundary of the Fire Island Wilderness is characterized by primary dunes, some nearly 40 feet high, that are thickly blanketed with beach grass. North of these dunes (heading towards the bay) lies the island swale and, in some areas, a line of secondary dunes. A variety of plant communities are found in the dune and swale zones, including scrub and grasslands, high thickets, pine woodlands, and occasional patches of maritime forest.

Interspersed among the dunes are unique freshwater bogs and marshes. Vast expanses of grasslands and tidal salt marsh stretch beyond the swale and secondary dunes, extending into the Great South Bay. The most extensive tidal marsh areas of the Seashore lie within the Fire Island Wilderness. These marsh areas are highly productive biological systems and provide habitat for a variety of reptiles, mammals, birds, and insects. Tidal

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

marshes also provide habitat for many inter-tidal and marine organisms and are the nursery grounds for various finfish and invertebrates. The marshes further provide very effective buffers against wave energy and protect adjacent uplands from erosion and saltwater intrusion by dissipating wave and tidal energy. For these reasons, as well as aesthetics, it is imperative that the Seashore preserve in as nearly a natural state as possible the remaining marsh lands of Fire Island Seashore and particularly those within the Fire Island Wilderness.

Mammals, reptiles, amphibians, insects, and birds inhabit the Fire Island Wilderness. Mammals include white-tailed deer (*Odocoileus virginianus*), cottontail rabbit (*Sylvilagus floridanus*), muskrat (*Ondatra zibethicus*), meadow vole (*Microtus pennsylvanicus*), and red fox (*Vulpes vulpes*). Several species of turtles, snakes, and toads inhabit the dunes and marshes, such as the Eastern mud turtle (*Kinosternon subrubrum*), black racer (*Coluber constrictor*), and Fowler's toad (*Bufo fowleri*). Fire Island Seashore, and the Fire Island Wilderness in particular, is located along the Atlantic Flyway and provides refuge to a variety of both migratory and resident bird species.

The natural quality of the Fire Island Wilderness, however, has been diminished by internal and external forces. Its proximity to densely populated areas affect air and water quality, as well as other biophysical processes. Several species found on Fire Island are threatened and endangered, including the federally threatened piping plover (*Charadrius melodus*), state-listed least tern (*Sternula antillarum*) and common tern (*Sterna hirundo*), and a federally threatened beach plant, seabeach amaranth (*Amaranthus pumilus*). Seabeach amaranth, the Eastern mud turtle (*Kinosternon subrubrum*), piping plover, and roseate tern (*Sterna dougallii*) are New York State-endangered, and the least tern (*Sternula antillarum*) and common tern (*Sterna hirundo*) are New York State-threatened. Several plants rare to New York State can also be found in the Fire Island Wilderness, such as seaside knotweed (*Polygonum glaucum*). Piping plovers, least terns, and seabeach amaranth plants nest and grow in the Wilderness near the toe of the primary dune in certain sections and in overwash areas where primary dunes used to be present.

The natural quality of the Fire Island Wilderness is still recovering from previous human occupation and disturbance; salt marsh mosquito ditches from the 1930s-50s, ornamental plantings around old homes, broken glass and debris, and water well and utility remnants detract from natural qualities. However, the area is still largely composed of native species and continues to provide habitat for much of Fire Island's wildlife.

Rhizomatous grasses deposit rhizomes and anchor their roots along the dunes, and animals utilizing this small-scale habitat then spread new seeds. Salt-tolerant vegetation thrives on the growing dunes, which block the salt spray and allow pioneering species like beach heather (*Hudsonia tomentosa*) to thrive and build soils, allowing thickets to form. This delicate cycle continues, supported by this extraordinary landscape, and contributes to a rare and valuable natural quality in the Fire Island Wilderness.

### Undeveloped Quality

Over the past several decades, the undeveloped quality of the Fire Island Wilderness has vastly improved. Many modern human developments have been removed, such as former residential structures and their associated sand roads, vehicle cuts, and the access road to Watch Hill, the former Watch Hill horse stable and maintenance yard and the access roads leading to them, and the former Long Cove boardwalk nature trail. The Burma Road, once a well-defined network of east-west off-road vehicle trails, has been transformed into a primitive footpath and hiking trail. Due to the history of heavy human influence in the Fire Island Wilderness, however, there are still opportunities to improve the undeveloped quality.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

Boardwalks, dune crossings, signs, and posts can be found here, although the majority of these are in place to protect resources, preserving the natural quality of the Fire Island Wilderness. Several non-culturally significant structures remain, however, and large quantities of debris exist, either as remains of old settlements or the current high user density on the beach adjacent to the Wilderness. Electric lines that are no longer active stretch along the length of the Wilderness. Even still, the Wilderness remains an exceptional retreat from surrounding urban areas, with relatively little evidence of modern human occupation.

### **Opportunities for Solitude or Primitive and Unconfined Recreation Quality**

Although the Fire Island Wilderness is not among the larger areas in the National Wilderness Preservation System, its isolation from the mainland amplifies the feeling of solitude. In many cases, even visual access to the mainland of Long Island is completely cut off by fog, the secondary dunes, or by tall vegetation behind the primary dune. The physical character of the Seashore and its vegetation provide visitors to this area an experience combining both isolation and enclosure.

As the user density within the Wilderness is relatively low, threats to solitude mostly originate from outside. Motorized access along the beach and bay, as well as air traffic, detract from one's sense of solitude. Large numbers of people entering the Wilderness, particularly near access points on the east and west end, can have a similar effect. In addition, proximity to New York City and other urban areas has a significant effect on night sky visibility. The Seashore attempts to minimize the impact of its own light fixtures, as the night sky remains a valuable experience in this Wilderness. An overnight visitor looking north may notice that the lights of Long Island make it difficult to view stars, but one only needs to turn 180 degrees to see a magnificent array of stars to the south over the Atlantic Ocean.

The Wilderness also provides a rare opportunity for unconfined recreation. It is one of the few places in the region to offer primitive camping, and limited trail maintenance contributes to opportunities for visitors to explore a wild, natural area with minimal human influences (briars and tangles of dense vegetation, poison ivy, mosquitoes, ticks, marshes, and uneven surfaces will be encountered) for which the user must be prepared. Facilities and actions that decrease self-reliant recreation, such as dune crossings, trail markers, and development of user trails, detract from this quality. In addition, limitations on user behavior, such as the prohibition of campfires and restricted access to dunes also limit unconfined recreation. Current restrictions are in place for the protection of visitors and are critical for the protection of the resources; however, managers should carefully consider the impacts to this quality when imposing any additional restrictions.

### **Cultural Resources**

Cultural resources are not currently included in the four primary qualities of wilderness character, yet cultural resources and wilderness are indisputably related. There is a significant history of human use in this area and other wildernesses prior to designation, which may have produced archeological sites, historic structures and artifacts, cultural landscapes and associated features, objects, and traditional cultural properties that contribute to our appreciation of wilderness. Cultural resources are an integral part of wilderness and can contribute to wilderness character.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

The 1980 Fire Island Wilderness Study documented several areas of cultural and historic interest that either currently or formerly existed in the area, such as a whaling station that operated at Whalehouse Point during the late 17th and 18th centuries, two lifesaving stations dating from the mid-1800's, and several beach cottages. An early fishing village and eventually a small summer community were developed at Long Cove in the late 19th century. Any culturally significant resources that are discovered will be preserved and protected, and Fire Island National Seashore will continue to work with native tribes to accommodate traditional uses, including but not limited to ceremonial practices and collecting.

### VI. WILDERNESS MANAGEMENT

The Fire Island Wilderness will be managed so as to preserve the wilderness character for future generations. The natural flora, fauna, and physiographic conditions of this unique area will be preserved in a primitive state, and the entire Wilderness will be administered as a natural ecosystem in which the influence of humans is minimal and the character of the area is instead molded by the forces of nature.

Evidence of previous human actions will continue to be removed or allowed to be reclaimed by nature. Before projects are undertaken, Fire Island National Seashore will conduct the necessary and required compliance appropriate to the proposed action, in accordance with Director's Order 12, the National Environmental Protection Act, and the National Historic Preservation Act of 1966, as amended.

#### A . Wilderness Character Monitoring

Wilderness character will be monitored to improve wilderness stewardship by providing managers with a tool that can be used to evaluate how selected actions and conditions affect wilderness character over time. Fire Island National Seashore has selected a suite of indicators and measures related to each of the four qualities of wilderness character, based on the interagency monitoring strategy called *Keeping It Wild*. The overall approach of this monitoring strategy is to: 1) choose a set of measures that are relevant, cost-effective, and tied to preserving wilderness character; 2) periodically collect data to assess trends in these measures; and 3) use these trends to assess and report on the overall trend in wilderness character.

Indicators, measures, and protocols selected by Fire Island National Seashore can be found in Appendix D, Monitoring Trends in Wilderness Character of the Otis Pike Fire Island High Dune Wilderness. These are subject to revision, as measures and protocols may be revised, added, or removed. Wilderness character will continue to be monitored, and data will be entered into the national Wilderness Character Monitoring Database.

#### B. Use of the Minimum Requirements Analysis

National Park Service Management policies (Sections 6.3.1 and 6.3.5) require the application of the concept of "minimum requirement " for the administration of the wilderness area regardless of wilderness category (designated, recommended, proposed, eligible for study, and potential). All parks with wilderness must have a documented process for applying a two-step minimum requirements concept analysis that adequately considers impacts to wilderness character. The Seashore will use the most current version of the Minimum Requirements Decision Guide worksheets developed by the Arthur Carhart National Wilderness Training Center. This minimum requirement analysis (analysis) must be applied to all administrative activities that could affect wilderness

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

character, including activities that are not specifically prohibited by section 4(c) of the Wilderness Act (16 USC 1133 (c)).

The analysis will be completed by an interdisciplinary team before the action takes place and will thoroughly consider the necessity of the action within wilderness. If the action is determined necessary, the National Park Service will select the alternative that results in the least impact on wilderness character. In the past, this was referred to as the “minimum tool,” but is now generally referred to as the “minimum activity,” because factors other than the type of tools used are also important when deciding on how best to preserve wilderness character (e.g., mode of transport, season, etc.).

When determining minimum requirements, the potential disruption of wilderness character and resources will be considered before—and given more significance than—economic efficiency and convenience. If a compromise of wilderness resources or character is unavoidable, only those actions that preserve wilderness character and/or have localized, short-term adverse impacts will be acceptable (2006 NPS Management Policies 6.3.5).

### C. Potential Wilderness Additions

Two potential wilderness additions totaling one acre within the Fire Island Wilderness (at Old Inlet and Smith Point) after the 17-acre addition in 1999. This one acre was managed by the Seashore so as not to preclude their official designation as wilderness.

The existing structures at Old Inlet were lost during Super Storm Sandy in 2012 and will not be replaced. This one acre potential wilderness at Old Inlet and Smith Point was added to the designated wilderness through notification in the Federal Register by the Secretary of the Interior in 2014, completing the 1,380 acres as stated in the 1980 legislation.

#### Old Inlet

The Old Inlet facilities (dock, boardwalk, dune crossing, and dehydrating toilet) were destroyed during Super Storm Sandy in November 2012 and will not be reconstructed. No structures currently exist that preclude wilderness designation.

#### Smith Point West Nature Trail

The Smith Point West Nature trail consists of a wooden elevated boardwalk. This trail originates from the Wilderness Visitor Center at the eastern wilderness boundary and provides access to three different habitats (swale, dune, and maritime forest). Portions of the trail near the bay were destroyed by ice and were removed in 2000. The Smith Point trail allows universal accessibility and offers visitors the opportunity to experience various habitats and a changing dune environment to which they might not otherwise have access. The only other remaining structures at Smith Point are three concrete pads.

### D. Utility Companies

The Wilderness currently includes the underground utility lines of the Long Island Power Authority (LIPA) and the lines of the New York Telephone Company, which run along the footprint of the old Burma Road for the entire



## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

length of the Wilderness. As these utilities are no longer active, this activity has been considered an abandoned use. Therefore, the Seashore will discuss with the utility companies the future removal of the right of way and the respective easements. The utility lines will be removed as soon as resources become available. Utility rights of way will not be renewed in the Wilderness, and the NPS will work with the utility companies to determine the extent at which the utilities or the NPS has the responsibility to remove the infrastructure.

### **E. Commercial Services**

No commercial services currently exist, but may be considered in the future “to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the area” (The Wilderness Act). Commercial services may be considered if they are determined necessary and proper for providing educational information about wilderness uses, resources, or values, or are necessary for other wilderness purposes in which benefits outweigh the negative impacts to wilderness character (Director’s Order 41: Wilderness Preservation and Management).

### **F. Motorized and Mechanical Use**

The use of motor vehicles and mechanical equipment by the public will not be permitted. Use of motor vehicles and mechanical equipment by federal, local, and state agencies will not be permitted except in emergencies and when there is absolutely no viable alternative. Emergencies may include evacuating severely sick and injured visitors (when the seriousness of the condition precludes the use of a litter), controlling wild or structural fires, or evacuating people during severe storms when travel on the beach is not possible. Any emergency use will be approved by the Superintendent of Fire Island National Seashore or his or her official designee. This plan does not restrict federal, state, or local official vehicles or other permitted off-road vehicles and vessels parallel to the Wilderness along the Atlantic Ocean Beach within current regulations of the Seashore as outlined in 36 CFR 7.20.

Emergency operations could impact all four qualities of wilderness character, so prevention is essential. Education and risk management can therefore improve both visitor safety and wilderness character.

### **G. Restoration**

Fire Island National Seashore has removed the majority of the remnants of modern human occupation and largely restored the Wilderness to its natural state. However, some remain, particularly around sites at which the NPS previously attempted to remove non-compliant structures. It will be a priority for the NPS to remove all developments and debris with the exception of remains that are culturally significant, such as those pertaining to maritime history.

Non-native invasive plant species within the Wilderness will be assessed and may be removed. All rehabilitation projects will be fully evaluated using the Minimum Requirements Analysis process and will be documented utilizing a set of monitoring protocols that include photographs before and after corrective action.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

**H. Fire Management**

Most natural fires are caused by lightning and are recognized as natural phenomena that must be permitted to continue if natural systems are to be perpetuated. Suppression of naturally ignited fires is considered trammeling, and is therefore considered to degrade wilderness character. The National Park Service fire management policies and the Fire Island Wildland Fire Management Plan (FMP) allow prescribed naturally ignited (lightning) fires to burn, provided that they contribute to the attainment of Seashore and/or Wilderness management objectives. The FMP was designed to meet Seashore resource management objectives while ensuring that firefighter and public safety are not compromised.

Human-ignited fires are the most common type of fires at Fire Island National Seashore and often destroy Seashore resources. Suppression of a human-ignited fire would not be considered degradation of wilderness character.

Wilderness character will be adequately protected during all fire management actions. Future revisions of the FMP will include a minimum requirements analysis, which will also be completed to address specific activities (methods or tools) for individual events or planned ignitions, as well as for actions that may be needed to restore, stabilize, or rehabilitate an area following fire.

**I. Wildlife and Vegetation Management**

Any authorized or unauthorized effort to manipulate biophysical processes, including flora and fauna, within the Wilderness, is considered trammeling. However, often a short-term compromise in untrammeled quality can result in a long-term improvement to natural quality. With this in mind, managers should carefully weigh the effects of their decisions and implementing actions on the wilderness character.

Fire Island National Seashore has developed a Mosquito Management Plan that should be referred to for actions affecting mosquito management. The Seashore will continue to monitor mosquitoes and allow existing mosquito ditches to naturally recover, as per the recommendations of research conducted in 2009<sup>2</sup>

Fire Island National Seashore is in the process of developing a White-tailed Deer and Vegetation Management Plan to provide guidance if it becomes necessary to control the growing population of white-tailed deer, which may be affecting native vegetation.

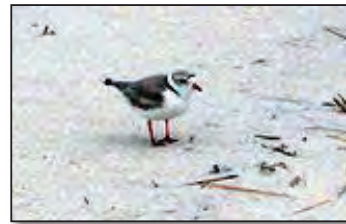
Under the Seashore's Piping Plover Monitoring and Management program, symbolic fencing and predator exclosures protect the federally threatened piping plover and its habitat. Due to the decreased anthropogenic disturbances to plovers nesting in or adjacent to the Wilderness, the number of plovers nesting in these areas is significantly greater than in other areas of the island. Preservation of threatened and endangered species greatly increases the natural quality of wilderness character.

<sup>2</sup> Corman, S.S., C. T. Roman, J.W. King, and P.G. Appleby. 2012. Salt marsh mosquito-control ditches: sedimentation, landscape change and restoration implications. *Journal of Coastal Research* 28: 874-880.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

Vegetation in the Fire Island Wilderness is largely native. Fire Island Seashore staff continually monitors for non-native invasive species, and the Seashore has adopted management actions to mitigate any new non-native species that may be transported to the area. Most non-native invasive species are managed through an Early Detection Rapid Response (EDRR) method. This kind of management will ensure that the Fire Island Wilderness maintains its relatively native state and any new non-native invasive species transported to the Fire Island Wilderness is eradicated before it can become established. In the Fire Island Wilderness, different management approaches are implemented to control non-native invasive plants that have already established themselves, such as Japanese black pine (*Pinus thunbergii*) and autumn olive (*Elaeagnus umbellata*). Many of these plants were planted by the former landowners, and efforts to remove them are implemented when resources are available. Seashore staff biologists work with local organizations throughout Long Island, such as the Long Island Invasive Species Management Area (LIISMA), which provides a list of the most aggressive non-native invasive species in the area and recommendations on how to manage them. This list is created by a scientific review committee that is comprised of botanists, plant research scientists, land managers, horticulturists, etc. Seashore staff biologists refer to the list and recommendations to direct management actions that are implemented in the Fire Island Wilderness.

Other actions may be taken in the future to manage wildlife or vegetation, including but not limited to management of threatened, endangered, rare, and/or non-native invasive species. Prior to taking management actions, the Seashore will undergo a minimum requirements analysis in which impacts to wilderness character will be thoroughly considered.



Piping Plover

### J. Interpretation and Education

Wilderness character and stewardship will be incorporated into Fire Island National Seashore's interpretive, educational, and outreach programming, and are to be considered in the long-range interpretive plan and annual implementation plan. NPS wilderness-specific significance statements and interpretive themes will be incorporated into all appropriate park-planning documents. The Fire Island Wilderness Visitor Center and, to a lesser degree, the Watch Hill Visitor Center, will be updated to include wilderness character and stewardship information, and signs may be placed at the wilderness thresholds (outside the wilderness boundary) to educate and inform visitors about the area they are about to enter.

Staff education is an integral part of wilderness stewardship. Therefore, wilderness character training will be incorporated into all appropriate training programs for Seashore staff, including seasonal staff, cooperating association employees, concessions employees, and volunteers.

Leave No Trace (LNT) principles and practices will be applied to all forms of recreation management within the Fire Island Wilderness. LNT principles should be incorporated into interpretive activities and products such as hikes, talks, brochures, maps, and websites. NPS staff from all divisions who work in the Wilderness should attend LNT workshops and training.

Information and interpretation of the Fire Island Wilderness and its use, including camping, will be based on established guidance documents and NPS policy. Site-specific interpretive themes for the Wilderness were articulated in the 1994 Interpretive Prospectus for Fire Island National Seashore; however, these are subject to

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

revision as more current management documents are developed and new guidelines established. New park primary interpretive themes have been drafted for inclusion in the new GMP.

The Fire Island Wilderness is unique among federal wilderness areas due to its small size and proximity to such a large urban population. It is also the only designated federal wilderness in New York State. Topics and concepts to be explored with personal and non-personal services interpreting the Fire Island Wilderness theme include:

- The value of wilderness—what is it and why do we need it?
- Natural processes without human intrusion
- Habitat diversity and biodiversity, including endangered species
- A natural/living laboratory to provide a “control” for scientific research on the rest of Fire Island

NPS-wide significance statements established for the NPS Wilderness Education and Partnership Program (2002) are relevant to the Fire Island Wilderness. They define the important aspects of wilderness and express the fundamental rationales that provide the connections between the enabling legislation and wilderness interpretive programs at the park level. Significance statements lead directly to NPS-wide wilderness interpretive themes. All significance statements are equally important and are not presented in priority order.

- a) Wilderness designation provides the highest level of legal protection for some of the most pristine and least manipulated wildlands in the United States.
- b) Lands that qualify for wilderness status are a rare and diminishing resource.
- c) Wilderness provides critical habitat for rare and endangered species of plants and animals as well as protection of other vital components of healthy and diverse ecosystems such as air quality, watersheds, and natural soundscapes.
- d) Wilderness provides a unique learning laboratory for scientific activities and lessons that address natural systems and their preservation, ecosystem management, and stewardship.
- e) Wilderness provides the opportunity to explore the societal and personal values as they relate to the use and appreciation of wildlands where humans are temporary visitors, not permanent residents.
- f) Wilderness contains exceptional qualities such as scenic beauty, natural sounds, and opportunities for reflection and solitude that are important for human inspiration and rejuvenation.
- g) The designation and management of wilderness affords opportunities to explore such concepts as preservation, development, history, freedom, interdependence, ingenuity, and land ethics.
- h) Wilderness provides a sense of wildness, which can be valuable to people whether or not those individuals actually visit wilderness. Just knowing that wilderness exists can produce a sense of curiosity, inspiration, renewal, imagination, hope and potential.
- i) Wilderness provides extraordinary and challenging recreational opportunities, allowing present and future generations the opportunity to experience, risk, reward, and self-reliance.
- j) Wilderness provides opportunities for the preservation, study and further understanding of cultures and cultural resources, including those related to indigenous peoples and traditional and sacred places.

Wilderness/backcountry camping information will be communicated to campers and the general public via non-personal media that may include but would not be limited to printed material, park website, social media, an on-line reservation system, and exhibits. The information conveyed will inform campers of potential hazards within the Wilderness and on the beach, and will outline the major points of the camping policy. “Leave No Trace” ethics will be followed. Informational materials will also incorporate established NPS-wide significance statements and interpretive themes, as appropriate.

Each year any revisions to the camping policy will be communicated to the public via park website and other appropriate non-personal media venues, including press media.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

### **Reservation System**

The park may use a reservation system to manage the wilderness and backcountry camping program. This system will help manage and maintain the camping capacity for each zone. Information on the reservation system will be posted on the park's website and shared via social media. No permit fee is currently charged, but a reservation cost recovery fee will be implemented.

### **K. Breach Management**

The legislation establishing the Fire Island Wilderness, and hence this plan, does not preclude the repair of breaches that may occur in the Wilderness in order to prevent loss of life, flooding, and other severe economic and physical damage to the Great South Bay and surrounding area. Prior to repair of any breach within the Wilderness, the appropriate level of NEPA compliance will be prepared.

## **VII. MANAGEMENT FACILITIES**

### **A. Roads, Trails and Vehicle Cuts**

The Burma Trail is a system of abandoned off-road vehicle access routes running the length of the Fire Island Wilderness. Since the 1983 Wilderness Management Plan, it has been left to revert to a natural state, with only visitor use maintaining it as a primitive footpath. Through time this east-west route has been reshaped by the dynamic natural processes of the barrier island. Remnants of the trail exist in some areas, while in others the dunes have rolled over the trail, or vegetation has overgrown any visual evidence of its previous trace alignment.

Wilderness is primitive and unconfined; the Seashore will promote the values of self-reliance and discovery by not maintaining the full extent of the remnant Burma Trail or pre-existing spur trails. Trailheads adjacent to the Wilderness boundary will concentrate visitor use on the Burma Trail to begin their journey into the Wilderness if they so choose. Trails beginning at trailheads and other points of interest will be permitted to develop only to that of a Class 1 Wilderness, single lane 0"-12" width, as per Federal U.S. Forest Service Trail Class standards. The Burma Trail will be minimally maintained by the Seashore near the eastern and western access of the Wilderness to create a transition between the maintained trails of adjacent lands and the unconfined Wilderness. However, access to the Wilderness can take place from any point, not just the Burma Trail, and the Seashore will encourage unconfined exploration of and recreation in the Wilderness, allowing visitors to experience the Wilderness largely on its own terms.

In areas where the Burma Trail has reverted to its natural state, the visitor can utilize dispersed travel and game trails. The Seashore will not allow any new trails that meet or exceed the Class 1 standard.

### **B. Pedestrian Dune Crossings**

There were two pedestrian dune crossings in the Wilderness before Super Storm Sandy in 2012: one approximately 1,400 feet west of Smith Point and another at the Old Inlet facility. NPS will not retain these facilities. Due to the dynamic nature of the dunes, temporary markers may be placed on the beach face to indicate appropriate places for visitors to access the Wilderness and to be relocated as the dunes themselves shift or as required to control egress from the Wilderness to areas of the beach that are closed for the protection of threatened or endangered species.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

**C. Signs**

As a result of the high concentration of visitors within the first mile to mile and a half east of Watch Hill, the existing "Keep Off The Dunes" signs will be retained. Additional signs may be necessary to protect threatened or endangered species and their habitat. Areas of interest may be marked by GPS coordinates coinciding with historic telephone markers, and may be accompanied by an interpretive wilderness guide. The Seashore will utilize signs only where absolutely necessary for the protection of the resource or to ensure the safety of the Wilderness visitor. Signs will be of the smallest size and minimum number necessary to accomplish the objective. Potential signs will be fully evaluated to determine their



Telephone Marker

necessity, number, and location and will be constructed in compliance with the NPS sign system specifications. Every effort will be made to ensure signs blend with the natural environment to the maximum extent possible and be posted during appropriate times for resource protection needs.

**D. Navigational Aids**

The Watch Hill channel markers are two pole-mounted electrically powered lights within the Wilderness adjacent to the western boundary and Great South Bay. This facility requires little maintenance and is necessary to ensure safe access by boats into the Watch Hill channel. The channel markers are an existing, non-conforming use and will remain. If, in the future, it is determined that these markers are no longer necessary to ensure safe access, they will be removed.

**E. Fire Island Wilderness Visitor Center**

The existing Fire Island Wilderness Visitor Center, located outside of the Wilderness boundary, serves as a critical gateway to both the Wilderness and the eastern segment of the park. Every effort will be made to keep the visitor center open year-round and staffed with interpreters to issue hunting, sportsman's driving, and camping permits, as well as to educate visitors about the Wilderness, wilderness character and values, outdoor ethics, and park-wide resources, significance, and programs.



## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

## APPENDIX A: Fire Island National Seashore Enabling Legislation

PUBLIC LAW 88-587  
88th Congress  
September 11, 1964

## AN ACT

TO ESTABLISH THE FIRE ISLAND NATIONAL SEASHORE,  
AND FOR OTHER PURPOSES

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That*

(a) for the purpose of conserving and preserving for the use of future generations certain relatively unspoiled and undeveloped beaches, dunes, and other natural features within Suffolk County, New York, which possess high values to the Nation as examples of unspoiled areas of great natural beauty in close proximity to large concentrations of urban population, the Secretary of the Interior is authorized to establish an area to be known as the "Fire Island National Seashore".

(b) The boundaries of the national seashore shall extend from the easterly boundary of Robert Moses State Park eastward to Moriches Inlet and shall include not only Fire Island proper, but also such islands and marshlands in the Great South Bay, Bellport Bay, and Moriches Bay adjacent to Fire Island as Sexton Island, West Island, Hollins Island, Ridge Island, Pelican Island, Pattersquash Island, and Reeves Island and such other small and adjacent islands, marshlands, and wet lands as would lend themselves to contiguity and reasonable administration within the national seashore and, in addition, the waters surrounding said area to distances of one thousand feet in the Atlantic Ocean and up to four thousand feet in Great South Bay and Moriches Bay, all as delineated on a map identified as "Fire Island National Seashore No. OGP-0002", dated June 1964. The Secretary shall file said map with the Federal Register, and it may also be examined in the offices of the Department of the Interior.

## SECTION 2

(a) The Secretary is authorized to acquire, and it is the intent of Congress that he shall acquire as appropriated funds become available for the purpose or as such acquisition can be accomplished by donation or with donated funds or by transfer, exchange, or otherwise, the lands, waters, and other property, and improvements thereon and any interest therein, within the boundaries of the seashore as established under Section 1 of this Act. Any property or interest therein owned by the State of New York, by Suffolk County, or by any other political subdivision of said State may be acquired only with the concurrence of such owner. Notwithstanding any other provision of law, any Federal property located within such area may, with the concurrence of the agency having custody thereof, be transferred without consideration to the administrative jurisdiction of the Secretary for use by him in carrying out the provisions of the Act. In exercising his authority to acquire property in accordance with the provisions of the subsection, the Secretary may enter into contracts requiring the expenditure, when appropriated, of funds authorized by the Act, but the liability of the United States under any such contract shall be contingent on the appropriation of funds sufficient to fulfill the obligations thereby incurred.

(b) When the Secretary determines that lands and waters or interests therein have been acquired by the United States in sufficient quantity to provide an administrative unit, he shall declare the establishment of the Fire Island National Seashore by publication of notice in the Federal Register.

Fire Island  
National  
Seashore  
Establishment

Boundaries

Acquisition of  
land.  
78 Stat. 928  
78 Stat. 929

Publication in  
Federal Register



## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

	<p>SECTION 2 (continued)</p> <p>(c) The Secretary shall pay not more than the fair market value, as determined by him, for any land or interest therein acquired by purchase.</p> <p>(d) When acquiring land by exchange the Secretary may accept title to any nonfederally owned land located within the boundaries of the national seashore and convey to the grantor any federally owned land under the jurisdiction of the Secretary. The lands so exchanged shall be approximately equal in fair market value, but the Secretary may accept cash from or pay cash to the grantor in order to equalize the values of the lands exchanged.</p> <p>(e) With one exception the Secretary shall not acquire any privately owned improved property or interests therein within the boundaries of the seashore or any property or interests therein within the communities delineated on the boundary map mentioned in Section 1, except beach or waters and adjoining land within such communities which the Secretary determines are needed for public access to the beach, without the consent of the owners so long as the appropriate local zoning agency shall have in force and applicable to such property a duly adopted, valid, zoning ordinance that is satisfactory to the Secretary. The sole exception to this limitation on the power of the Secretary to condemn improved property where appropriate zoning ordinances exists shall be in the approximately eight-mile area from the easterly boundary of the Brookhaven town park at Davis Park, in the town of Brookhaven, to the westerly boundary of the Smith Point County Park. In this area only, when the Secretary deems it advisable for carrying out the purposes of this Act or to improve the contiguity of the park land and ease its administration, the Secretary may acquire any land or improvements therein by condemnation. In every case in which the Secretary exercises this right of condemnation of improved property the beneficial owner or owners (not being a corporation) of any improved property so condemned, proved he, she, or they held the same or a greater estate in the property on July 1, 1963, may elect as a condition of such acquisition by the Secretary any one of the following three alternatives:</p> <p>(1) that the Secretary shall take the said property in fee simple absolute and pay the fair market value thereof as of the date of such taking;</p> <p>(2) that the owner or owners shall retain a life estate in said property, measured on the life of the sole owner or on the life of any one person among multiple owners (notice of the person so designated to be filed in writing with the Secretary within six months after the taking) or on the life of the survivor in title of any estate held on July 1, 1963, as a tenancy by the entirety. The price in such case shall be diminished by the actuarial methods;</p> <p>(3) that the owner or owners shall retain an estate for twenty-five years. The price in this case shall likewise be diminished by the value of the estate retained.</p> <p>(f) The term "improved property" as used in this Act shall mean any building, the construction of which was begun before July 1, 1963, and such amount of land, not in excess of two acres in the case of a residence or ten acres in the case of a commercial or industrial use, on which the building is situated as the Secretary considers reasonably necessary to the use of the building: Provided, That the Secretary may exclude from improved properties any beach or waters, together with so much of the land adjoining such beach or waters, as he deems necessary for public access thereto.</p>
78 Stat. 929 78 Stat. 930	
"Improved property"	
Regulations	<p>SECTION 3</p> <p>(a) In order to carry out the provisions of section 2, the Secretary shall issue regulations, which may be amended from time to time, specifying standards that are consistent with the purposes of this Act for zoning ordinances which must meet his approval.</p> <p>(b) The standards specified in such regulations shall have the object of (1) prohibiting</p>

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

## SECTION 3 (continued)

new commercial or industrial uses, other than commercial or industrial uses which the Secretary considers are consistent with the purpose of this Act, of all property within the national seashore, and (2) promoting the protection and development for purposes of the Act of the land within the national seashore by means of acreage, frontage, and setback requirements.

(c) Following issuance of such regulations the Secretary shall approve any zoning ordinance or any amendment to any approved zoning ordinance submitted to him that conforms to the standards contained in the regulations in effect at the time of adoption of the ordinance or amendment. Such approval shall remain effective for so long as such ordinance or amendment remains in effect as approved.

(d) No zoning ordinance or amendment thereof shall be approved by the Secretary which (1) contains any provisions that he considers adverse to the protection and development, in accordance with the purposes of this Act, of the area comprising the national seashore; or (2) fails to have the effect of providing that the Secretary shall receive notice of any variance granted under, or any exception made to, the application such ordinance or amendment.

(e) If any improved property, with respect to which the Secretary's authority to acquire by condemnation has been suspended according to the provisions of this Act, is made the subject of a variance under, or becomes for any reason an exception to, such zoning ordinance, or is subject to any variance, exception, or use that fails to conform to any applicable effect at the time of passage of such ordinance, the suspension of the Secretary's authority to acquire such improved property by condemnation shall automatically cease.

(f) The Secretary shall furnish to any party in interest upon request a certificate indicating the property with respect to which the Secretary's authority to acquire by condemnation is suspended.

78 Stat. 930  
78 Stat. 931

## SECTION 4

(a) Owners of improved property acquired by the Secretary may reserve for themselves and their successors or assigns a right of use and occupancy of the improved property for noncommercial residential purposes for a term that is not more than twenty-five years. The value of the reserved right shall be deducted from the fair market value paid for the property.

Owners Use  
of Property

(b) A right of use and occupancy reserved pursuant to this section shall be subject to termination by the Secretary upon his determination that the use and occupancy is not consistent with an applicable zoning ordinance approved by the Secretary in accordance with the provisions of Section 3 of this Act, and upon tender to the owner of the right an amount equal to the fair market value of that portion of the right which remains unexpired on the date of termination.

## SECTION 5

The Secretary shall permit hunting, fishing, and shell-fishing on lands and waters under his administrative jurisdiction within the Fire Island National Seashore in accordance with the laws of New York and the United States of America, except that the Secretary may designate zones where, and establish periods when, no hunting shall be permitted for reasons of public safety, administration, or public use and enjoyment. Any regulations of the Secretary under this Section shall be issued after consultation with the Conservation Department of the State of New York.

Hunting and  
Fishing

## SECTION 6

The Secretary may accept and use for purposes of this Act any real or personal property or moneys that may be donated for such purposes.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

<p>Sunken Forest Preserve</p>	<p><b>SECTION 7</b></p> <p>(a) The Secretary shall administer and protect the Fire Island National Seashore with the primary aim of conserving the natural resources located there. The area known as the Sunken Forest Preserve shall be preserved from bay to ocean in as nearly its present state as possible, without developing roads therein, but continuing the present access by those trails already existing and limiting new access to similar trails limited in number to those necessary to allow visitors to explore and appreciate this section of the seashore.</p> <p>(b) Access to that section of the seashore lying between the easterly boundary of the Brookhaven town park at Davis Park and the westerly boundary of the Smith Point County Park shall be provided by ferries and footpaths only, and no roads shall be constructed in this section except such minimum roads as may be necessary for park maintenance vehicles. No development or plan for the convenience of visitors shall be undertaken therein which would be incompatible with the preservation of the flora and fauna or the physiographic conditions now prevailing, and every effort shall be exerted to maintain and preserve this section of the seashore as well as that set forth in the preceding paragraph in as nearly their present state and condition as possible.</p> <p>(c) In administering, protecting, and developing the entire Fire Island National Seashore, the Secretary shall be guided by the provisions of this Act and the applicable provisions of the laws relating to the national park system, and the secretary may utilize any other statutory authority available to him for the conservation and development of natural resources to the extent he finds that such authority will further the purposes of this Act. Appropriate user fees may be collected notwithstanding any limitation on such authority by any provision of law.</p>
<p>Shore erosion control 78 Stat. 931 78 Stat. 932</p>	<p><b>SECTION 8</b></p> <p>(a) The authority of the Chief of Engineers, Department of the Army, to undertake or contribute to shore erosion control or beach protection measures on lands within the Fire Island National Seashore shall be exercised in accordance with a plan that is mutually acceptable to the Secretary of the Interior and the Secretary of the Army and that is consistent with the purposes of this Act.</p> <p>(b) The Secretary shall also contribute the necessary land which may be required at any future date for the construction of the new inlet across Fire Island in such location as may be feasible in accordance with plans for such an inlet which are mutually acceptable to the Secretary of the Interior and the Secretary of the Army and that is consistent with the purposes of this Act.</p>
<p>Fire Island National Ad- visory Com- mission Establishment</p>	<p><b>SECTION 9</b></p> <p>(a) There is hereby established a Fire Island National Seashore Advisory Commission (hereinafter referred to as the Commission). The Commission shall terminate on the tenth anniversary of the date of this Act or on the declaration, pursuant to Section 2(b) of this Act, of the establishment of the Fire Island National Seashore, whichever occurs first. The Commission shall consist of fifteen members, each appointed for a term of two years by the Secretary, as follows:</p> <p>(1) Ten members to be appointed from recommendations made by each of the town boards of Suffolk County, New York, one member from the recommendations made by each such board;</p> <p>(2) Two additional members to be appointed from recommendations of the town boards of the towns of Islip and Brookhaven, Suffolk County, New York;</p> <p>(3) One member to be appointed from the recommendation of the county executive of Suffolk County, New York;</p> <p>(4) One member to be designated by the Secretary.</p>

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

## SECTION 9 (continued)

- (b) The Secretary shall designate one member to be Chairman.
- (c) A member of the Commission shall serve without compensation.
- (d) The Commission established by this section shall act and advise by affirmative vote of a majority of the members thereof.
- (e) The Secretary or his designee shall, from time to time, consult with the members of the Commission with respect to matters relating to the development of Fire Island National Seashore and shall consult with the members with respect to carrying out the provisions of Sections 2, 3, and 4 of this Act.
- (f) (1) Any member of the Advisory Commission appointed under this Act shall be exempted, with respect to such appointment from the operation of Sections 281, 283, 284, and 1914 of title 18 of the United States Code and Section 190 of the Revised Statutes (5 U.S.C. 59) except as otherwise specified in paragraph (2) of this subsection.
- (2) The exemption granted by paragraph (1) of this subsection shall not extend--
  - (i) to the receipt of payment of salary in connection with the appointee's Government service from any sources other than the private employer of the appointee at the time of his appointment, or
  - (ii) during the period of such appointment, and the further period of two years after the termination thereof, to the prosecution or participation in the prosecution, by any person so appointed, of any claim against the Government involving any matter concerning which the appointee had any responsibility arising out of his appointment during the period of such appointment.

Conflict of  
Interest

76 Stat. 1126

78 Stat. 932  
78 Stat. 933

## SECTION 10

There is hereby authorized to be appropriated not more than \$16,000,000 for the acquisition of lands and interests in land pursuant to this Act.

Appropriation

APPROVED SEPTEMBER 11, 1964.



## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

## APPENDIX B: Otis Pike Fire Island High Dune Wilderness Enabling Legislation

PUBLIC LAW 96-585—DEC. 23, 1980

94 STAT. 3379

Public Law 96-585  
96th Congress

## An Act

To designate certain lands of the Fire Island National Seashore as the "Otis Pike  
Fire Island High Dune Wilderness", and for other purposes.Dec. 23, 1980  
[H.R. 7814]

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, in accordance with section 3(c) of the Wilderness Act (78 Stat. 890; 16 U.S.C. 1132(c)), certain lands in the Fire Island National Seashore, New York, comprising approximately one thousand three hundred and sixty-three acres, and potential wilderness additions comprising approximately eighteen acres, as depicted on the map entitled "Wilderness Plan—Fire Island National Seashore", dated December 1980, are hereby designated as the "Fire Island Wilderness". The southern boundary of the wilderness shall be the toe of the primary dunes.*

Otis Pike Fire  
Island High  
Dune  
Wilderness, N.Y.  
Designation,  
16 USC 1132  
note.

(b) As soon as practicable after this Act takes effect, a map and a description of the boundaries of the wilderness area shall be filed with the Committee on Interior and Insular Affairs of the United States House of Representatives and the Committee on Energy and Natural Resources of the United States Senate, and such map and description shall have the same force and effect as if included in this Act: *Provided*, That correction of clerical and typographical errors in such map and description may be made. The map and description of boundaries shall be on file and available for public inspection in the offices of the Superintendent of the Fire Island National Seashore and the Director of the National Park Service.

Boundary  
description and  
map, filing with  
congressional  
committees.

(c) Lands which represent potential wilderness additions, upon publication in the Federal Register of a notice by the Secretary of the Interior that all uses prohibited thereon by the Wilderness Act have ceased, shall thereby be designated wilderness. Pending such designation, the Secretary shall administer such lands in such manner as to preserve, insofar as is possible, their wilderness or potential wilderness character.

Potential  
wilderness  
additions,  
administration.

(d) Wilderness designation shall not preclude the repair of breaches that occur in the wilderness area, in order to prevent loss of life, flooding, and other severe economic and physical damage to the Great South Bay and surrounding areas.

(e) Section 10 of the Act of September 11, 1964 (78 Stat. 928) is amended by changing the period to a comma, and by adding the following: "and, after the date of enactment of this provision, not more than \$500,000 for development."

Appropriation  
authorization.  
16 USC 459e-9.

94 STAT. 3380

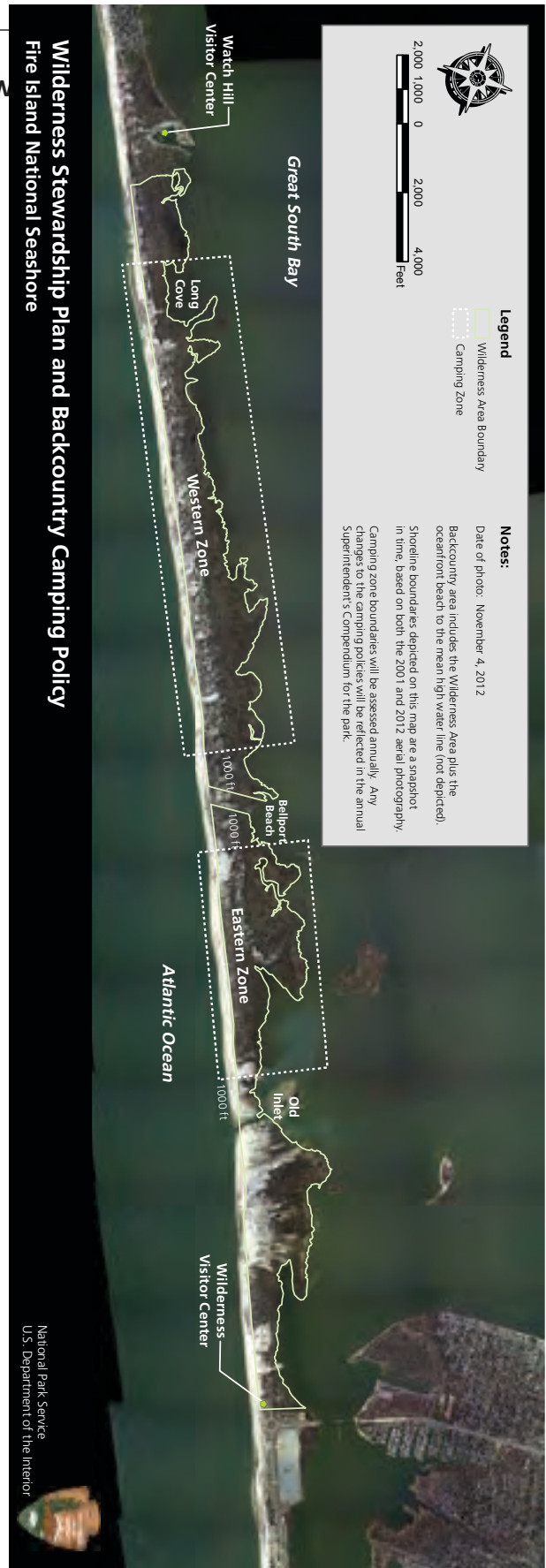
PUBLIC LAW 96-585—DEC. 23, 1980

(f) Authorizations of moneys to be appropriated under this Act shall be effective on October 1, 1981. Notwithstanding any other provision of this Act, authority to enter into contracts, to incur obligations, or to make payments under this Act shall be effective only to the extent, and in such amounts as are provided in advance in appropriation Acts.

Approved December 23, 1980.

## Fire Island National Seashore Wilderness Stewardship Plan

## Appendix C. Map of the Otis Pike Fire Island High Dune W



## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

**APPENDIX D: Monitoring Trends in Wilderness Character of the Fire Island Wilderness**

An interagency Wilderness Character Monitoring Team representing the Bureau of Land Management, Fish and Wildlife Service, National Park Service, U.S. Forest Service, and U.S. Geological Survey created an interagency strategy to monitor trends in wilderness character across the National Wilderness Preservation System called *Keeping It Wild* (Landres et al. 2008). This framework defines the four qualities of wilderness character using language directly from the Wilderness Act and identifies specific quantifiable indicators and measures that can be used to assess trends.

Quality	Monitoring Question	Indicator
<b>Untrammeled—</b> Wilderness is essentially unhindered and free from modern human control or manipulation	What are the trends in actions that control or manipulate the “earth and its community of life” inside wilderness?	Actions authorized by the Federal land manager that manipulate the biophysical environment
		Actions not authorized by the Federal land manager that manipulate the biophysical environment
<b>Natural—</b> Wilderness ecological systems are substantially free from the effects of modern civilization	What are the trends in terrestrial, aquatic, and atmospheric natural resources inside wilderness?	Plant and animal species and communities Physical resources
	What are the trends in terrestrial, aquatic, and atmospheric natural processes inside wilderness?	Biophysical resources
<b>Undeveloped—</b> Wilderness retains its primeval character and influence, and is essentially without permanent improvement or modern human occupation	What are the trends in non-recreational development inside wilderness?	Non-recreational structures, installations, and developments Inholdings
	What are the trends in mechanization inside wilderness?	Use of motor vehicles, motorized equipment, or mechanical transport
	What are the trends in cultural resources inside wilderness?	Loss of statutorily protected cultural resources
<b>Solitude or Primitive and Unconfined Recreation—</b> Wilderness provides outstanding opportunities for solitude or primitive and unconfined recreation	What are the trends in outstanding opportunities for solitude inside wilderness?	Remoteness from sights and sounds of people inside the wilderness Remoteness from occupied and modified areas outside wilderness
		Facilities that decrease self-reliant recreation
	What are the trends in outstanding opportunities for primitive and unconfined recreation inside wilderness?	Management restrictions on visitor behavior

**Table 1: Interagency monitoring framework as shown in *Keeping it Wild*, Landres et al. 2007**



## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

## Indicators and Measures

For each quality of wilderness character there are monitoring questions, indicators, and measures. Each indicator is listed below, followed by a description of the indicator, the measures selected, and protocols describing how the data will be collected. The data collected the first year will serve as a baseline assessment, and in subsequent years, trends over time can be evaluated. The trend in each measure will be assigned a numerical score of -1, 0, or 1 as compared to the prior year, indicating “degrading,” “stable,” or “improving” wilderness character, respectively. The chart following the descriptions indicates whether that measure increases (↑) or decreases (↓) wilderness character (WC). All measures are weighed equally, allowing for an assessment of change in wilderness character but not assessing the magnitude of change. The measures and protocols are subject to change as staff obtain new information or data, or identify measures or protocols that more accurately reflect change in wilderness character.

Quality	Indicator	Measures	Ranking
<b>Untrammelled-</b> Wilderness is essentially unhindered and free from modern human control or manipulation	1. <i>Actions authorized by the NPS-FIIS that manipulate the biophysical environment</i>	a) Number of actions to manage plants, animals, pathogens, soil, water, or fire b) Number of natural fire starts that receive a suppression response	a) ↑ in # of actions = ↓ in WC b) ↑ in # of actions = ↓ in WC
	2. <i>Actions NOT authorized by the NPS-FIIS that manipulate the biophysical environment</i>	a) Number of unauthorized actions by other Federal or State agencies, citizen groups, or individuals that manipulate plants, animals, pathogens, soil, water, or fire	a) ↑ in # of actions = ↓ in WC
<b>Natural-</b> Wilderness ecological systems are substantially free from the effect of modern civilization	1. <i>Plant and animal species and communities</i>	a) Number of indigenous species that are listed as threatened and endangered, sensitive, or of concern b) Abundance of indigenous species that are listed as threatened and endangered, sensitive, or of concern c) Number of invasive non-indigenous species d) Acreage of invasive non-indigenous species	a) ↑ in # = ↑ in WC b) ↑ in abundance = ↑ in WC c) ↑ in # = ↓ in WC d) ↑ in acreage = ↓ in WC
	2. <i>Physical resources</i>	a) Ozone air pollution based on concentrations of N100 episodic and W126 chronic ozone exposure affecting sensitive plants b) Extent and magnitude of change in water quality	a) ↑ in ozone = ↓ in WC b) ↑ in WQ measurements = ↓ in WC
	3. <i>Biophysical resources</i>	a) Forest Health b) Salt Marsh Surface Elevation Tables (SETs)	a) ↑ in acreage = ↓ in WC b) ↑ in elevation = ↓ in WC

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

Quality	Indicator	Measures	Ranking
<b>Undeveloped-</b>  Wilderness is essentially without permanent improvements or modern human occupation	1. <i>Non-recreational structures, installations, and developments</i>	a) Number of authorized physical developments b) Number of unauthorized (user-created) physical developments	a) ↑ in # = ↓ in WC b) ↑ in # = ↓ in WC
	2. <i>Use of motor vehicles, motorized equipment, or mechanical transport</i>	a) Number of administrative and non-emergency uses of motor vehicles, motorized equipment, or mechanical transport b) Number of emergency uses of motor vehicles, motorized equipment, or mechanical transport c) Number of motor vehicle, motorized equipment, or mechanical transport uses NOT authorized by NPS-FIIS	a) ↑ in # = ↓ in WC b) ↑ in # = ↓ in WC c) ↑ in # = ↓ in WC
	3. <i>Removal of remnants that remain in the wilderness from past occupation</i>	a) Number of actions to remove remnants	a) ↑ in # = ↑ in WC
<b>Solitude or Primitive and Unconfined Recreation-</b>  Wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge	1. <i>Remoteness from sights and sounds of people inside wilderness</i>	a) Amount of visitor use b) Number of areas negatively affected by camping c) Number of actions taken that affect travel routes inside the wilderness	a) ↑ in visitor use = ↓ in WC b) ↑ in # of actions = ↓ in WC c) ↑ in # of actions = ↓ in WC
	2. <i>Remoteness from occupied and modified areas outside the wilderness</i>	a) Area of Wilderness affected by access or travel routes that are adjacent to the Wilderness b) Night sky visibility averaged over the Wilderness	a) ↑ of people = ↓ in WC b) ↑ in light pollution = ↓ in WC
	3. <i>Facilities that decrease self-reliant recreation</i>	a) Number of agency-provided recreation facilities	a) ↑ in # = ↓ in WC
	4. <i>User trail development</i>	a) Number of actions taken to mitigate user trails	a) ↑ in # of actions = ↓ in WC
	5. <i>Management restrictions on visitor behavior</i>	a) Number of visitor-use restrictions	a) ↑ in # of restrictions = ↓ in WC

Table 2: Wilderness Character Monitoring Framework for the Otis Pike Fire Island High Dune Wilderness

**Untrammeled Quality**

1. Actions authorized by the Federal land manager that manipulate the biophysical environment
  - a. Number of actions to manage plants, animals, pathogens, soil, water, or fire
    - i. Description: All actions to manage plants, animals, pathogens, soil, water, or fire within the Wilderness will be documented.

Examples of actions

1. Every action to eradicate non-native invasive plant species within a defined area (i.e., a polygon of an infested area that was mapped using GPS/GIS) during a given period of time will be documented.

Measure: See Appendix A

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

2. Any action to maintain or rebuild deer exclosures within the boundaries of the Wilderness will be identified.

Measure: Number of actions to maintain or rebuild deer exclosures within the boundaries of the Wilderness will be tallied annually.

3. To exclose predators from nest(s) (e.g., Piping Plover nests). To exclose predators from Piping Plover nests for one year would be considered one action.
4. Number of actions to symbolically fence threatened and endangered species habitat (see 3 above).

#### Future Management

As management strategies change, new descriptions of the actions and how to measure them will be identified.

- b. Number of natural fire starts that receive a suppression response
  - i. Description: All natural fire starts and suppression activity within the Wilderness area will be documented on the NPS Wildland Fire Report Form.
  - ii. Measure: Annual compilation of natural fires that receive suppression will be reported.

## 2. Actions NOT authorized by the Federal land manager that manipulate the biophysical environment

- a. Number of unauthorized actions by other Federal or State agencies, citizen groups, or individuals that manipulate plants, animals, pathogens, soil, water, or fire
  - i. Description: All unauthorized actions that manipulate plants, animals, pathogens, soil, water, or fire will be investigated by the Resource and Visitor Protection staff with necessary technical assistance by Resource Management staff. All incidents will be documented on Form 10-343 Case Incident Report.
  - ii. Measure: Case Incident Reports will be compiled annually.

### Natural Quality

1. Plant and animal species and communities
  - a. Abundance, distribution, or number of indigenous species that are listed as threatened and endangered, sensitive, or of concern
    - i. Description: All species (federal or state listed and/or species of concern to the park) that exist within the boundaries of the Wilderness will be identified. Due to the dynamic nature of the system and thus the boundary, this analysis will include species that may live within or directly adjacent to the Wilderness.
    - ii. Measure:
      1. The total number of these species found within the Wilderness
      2. The abundance of these identified species

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

- b. Abundance, distribution, or number of invasive non-indigenous species
  - i. Description: Total area of invasive plants in the Wilderness.
  - ii. Measure: All species that exist within the boundaries of the Wilderness will be identified. The total acreage of invasive plants within the Wilderness will be calculated. This will be monitored annually, because the total acreage will fluctuate due to the either an increase of invasive plants or eradication efforts.

## 2. Physical resources

- a. Ozone air pollution based on concentration of N100 episodic and W126 chronic ozone exposure affecting sensitive plants
  - i. Description: The park can utilize air quality monitors within 10 miles of the park for ozone. The NPS Air Resources Division has already been using off-site air quality monitors to assess trends in ozone (NPS 2008); the park will contact the division to find out which off-site air quality monitor they've been using and utilize the same resource for this protocol.
  - ii. Measure:
    - 1. Average concentration of N100 episodic ozone
    - 2. Average concentration of W126 chronic ozone
- b. Extent and magnitude of change in water quality
  - i. Description: The park can utilize groundwater quality research already occurring within the Wilderness and adjacent areas (USGS and the NPS Northeast Coastal Barrier Island Network). This data would be most suitable to use, since these areas are permanently marked and part of a long-term monitoring program. Monitoring now occurs every other year.
  - ii. Measure: Need to consult with USGS and NPS (Northeast Coastal Barrier Island Network) on the best indicators. TBD.

## 3. Biophysical resources

- a. Forest Health
  - i. Description: The Durham Field Office of Forest Health Protection conducts insect and disease aerial detection surveys annually using a fixed-wing aircraft. FIIS works in cooperation with the U.S. Forest Service to complete this survey.
  - ii. Measure: The map created from this survey will be used to document the current year's forest injury within the Wilderness.
- b. Salt Marsh Elevation
  - i. Description: Researchers from the NPS Northeast Coastal Barrier Island monitor salt marsh elevation tables (SET) at several permanently marked areas within the Wilderness salt marshes.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

- ii. Measure: The surface elevations of the salt marshes will be averaged. This is typically measured as a rate: mm per year  $\pm$  SE.

**Undeveloped Quality**

1. Non-recreational structures, installations, and developments
  - a. Number of authorized physical developments
    - i. Description: An inventory of all authorized physical developments will be created and maintained. Further developments will be within the framework of the Minimum Requirements Decision Guide.
    - ii. Measure: All new or agency-proposed development will be compiled annually.
  - b. Number of unauthorized (user-created) physical developments
    - i. Description: An inventory of all unauthorized physical developments will be created and maintained.
    - ii. Measure: Annual physical inspections of the Wilderness will be performed; new developments will be noted and brought to attention for possible reclamation.
2. Use of motor vehicles, motorized equipment, or mechanical transport
  - a. Number of administrative and non-emergency use of motor vehicles, motorized equipment, or mechanical transport
    - i. Description: All agency use of motorized or mechanical transport will be within the framework of the Minimum Requirements Decision Guide. Minimum activity decisions will be documented and filed.
    - ii. Measure: Administrative and agency use will be compiled annually.
  - b. Number of emergency uses of motor vehicles, motorized equipment, or mechanical transport
    - i. Description: All emergency uses of motorized or mechanical transport for emergencies involving the health and safety of persons by any Emergency Medical Service provider or First Responder will be documented on Form 10-343 Case Incident Report
    - ii. Measure: Case Incident Reports will be compiled annually.
  - c. Number of motor vehicle, motorized equipment, or mechanical transport uses NOT authorized by the Federal land manager
    - i. Description: All unauthorized use of motorized or mechanical transport will be investigated by Visitor and Resource Protection and documented on Form 10-343 Case Incident Report.
    - ii. Measure: Case Incident Reports will be compiled annually.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

3. Removal of remnants that remain in the Wilderness from past human occupation
  - a. Number of actions to remove past remnants of human occupation
    - i. Description: No cultural resources within the Fire Island Wilderness have been identified. All past remnants of human occupation are not protected in any way and ultimately detract from wilderness character; their removal would increase wilderness character.
    - ii. Measure: All actions to remove past remnants of human occupation will be pursued according to the Minimum Required Decision Guide and will be compiled annually.

**Solitude or Primitive and Unconfined Recreation Quality**

1. Remoteness from sights and sounds of people inside Wilderness
  - a. Amount of visitor use
    - i. Description: Backcountry camping is managed by the Parks Backcountry Camping Policy. It serves as the guide for the number of campers and visitor restrictions within Fire Island Wilderness. Backcountry camping permits will be issued to individuals who camp in the Wilderness.
    - ii. Measure: The total number of people will be multiplied by the number of nights camping to get a total number of stays. The number of overnight stays will be annually compiled and assessed.
  - b. Number of areas negatively affected by camping
    - i. Description: The Fire Island Wilderness has no designated campsites. Backcountry camping in the area follows the principle of "leave no trace." The area will be monitored continuously by Visitor and Resource Protection, and action will be taken immediately to rehabilitate any area that has been impacted due to camping. The Wilderness will be considered holistically during the annual condition assessment for camping.
    - ii. Measure: Any action taken to mitigate or rehabilitate an impact due to camping will be documented on Form 10-343 (Case Incident Report) and compiled annually.
  - c. Area affected by access or travel routes inside the Wilderness
    - i. Description: Fire Island National Seashore maintains the boardwalks at Old Inlet and Smith Point along with the footpath called Burma Trail. These are the designated travel routes within the Wilderness, but visitors are not limited to them.
      1. All existing boardwalks with the Wilderness will be monitored annually for changes, which could include their removal or destruction due to weather, erosion, or general wear and tear.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

2. Any decision to reconstruct or create addition boardwalk within the Wilderness will be within the framework of Minimum Requirements Decision Guide. Minimum activity decisions will be documented and filed.
  3. Burma Trail is a very dynamic trail and shifts with the moving sand. Efforts made to maintain a clear trail will be made within the framework of the Minimum Requirements Decision Guide. Minimum activity decisions will be documented and filed.
- ii. Measure: The total number of actions taken will be compiled annually.
2. Remoteness from occupied and modified areas outside the Wilderness
- a. Area of wilderness affected by access or travel routes that are adjacent to the Fire Island Wilderness
    - i. The Fire Island Wilderness is affected by a several access or travel routes that are adjacent to the Wilderness.
      1. **Watch Hill**
        - a. Description: Watch Hill is on the westernmost border of the Wilderness. It houses employees and a 200-boat marina that is utilized by visitors. Within the marina there are many different facilities such as a visitor center, tiki bar, restaurant, snack bar, and general store. Watch Hill also contains a campground with 25 sites and one group site. Access to the area is provided by seasonal ferry and private boat only.
        - b. Measure: Total visitation as calculated from the Monthly Public Use Report for Watch Hill.
      2. **Bellport Beach**
        - a. Description: Owned by the Village of Bellport and also referred to as Ho-Hum Beach, the area is approximately 17 acres. It has seasonal access by the private ferry for Village residents and contains a small marina, concession stand, showers, gazebo, and a seasonally lifeguarded beach.
        - b. Measure: Visitation totals will be acquired from the Village of Bellport.
      3. **Great South Bay**
        - a. Description: The Great South Bay is a navigable waterway with channels maintained by the United States Coast Guard. The main east-west channel adjacent to the Wilderness is outside of the Park's boundary, but two north-south channels exist within the boundary that are privately maintained. The Village of Bellport



## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

maintains a channel that accesses land outside the Wilderness area.

- b. Measure: The total number of boats that are moored offshore or beached within the Old Inlet area will be compiled..

#### 4. Smith Point and Wilderness Visitor Center

- a. Description: Smith Point lies on the easternmost border of the Wilderness. The Wilderness Visitor Center is located just outside the boundary and is accessible year round by vehicle via a bridge. Smith Point allows for visitor day use on the Great South Beach along with recreational beach driving in season.
- b. Measure: The total number of uses will be calculated from the East District Monthly Public Use Report, including the number of visitors to the visitor center and the beach and recreational vehicles.

#### 5. Great South Beach Off-Road Driving

- a. Description: The Wilderness Visitor Center at Smith Point tracks the number of trips ORVs take on the ocean beach adjacent to the Wilderness. Vehicles operating on the beach must obtain a federal permit for recreation, contractor, essential service, public utility, or resident access. A 20-foot buffer exists between the southern boundary of the Wilderness and route for off-road driving.
- b. Measure: The total number of non-recreation visits as per the Monthly Public Use Report.

- b. Night sky visibility averaged over the Wilderness

- i. Description: A general baseline analysis of the brightness of the night sky was conducted in FY11. Park staff will continue to use Sky Quality Meters to measure the overall brightness of the night sky. Staff will consult with scientists working with the NPS Night Sky Program to ensure quality data collection and analysis. Measures of the brightness of the night sky will be collected annually and compared to previous years. In conjunction, Management will create an outdoor lighting plan that will assess current artificial lighting in/around the Wilderness and work to promote natural darkness for dependent fauna and visitor enjoyment.
- ii. Measure:
  - 1. Average brightness of the night sky
  - 2. The number of actions to improve the natural dark sky

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

## 3. Facilities that decrease self-reliant recreation

## a. Number of agency-provided recreation facilities

- i. Description: An inventory of all authorized agency-provided recreational facilities will be created and maintained. Other facilities will be developed within the framework of Minimum Requirement Decision Guide.
- ii. Measure: Annual physical inspection of the Wilderness will be performed. All new and existing agency developments will be compiled.

## b. Number of user-created recreation facilities

- i. Description: Facilities built or installed by users for recreational purposes include but not limited to shelters, trails, trail markings, bridges, and hunting blinds. An inventory of user-created recreation facilities will be created and maintained.
- ii. Measure: Annual physical inspection of the Wilderness will be performed, and all new user-created facilities documented on Form 10-343 Case Incident Report and compiled annually.

## 4. User Trail Development

## a. Number of actions taken to mitigate user trails

- i. Description: User trails are defined as any path or route of travel that is not officially created and maintained by the Fire Island National Seashore. Annual physical inspection of the Wilderness will be performed, and user trails will be inventoried and assessed for condition.
- ii. Measure: Any action taken to mitigate impact reported on Form 10-343 Incident Case Report and compiled annually.

## 5. Management restrictions on visitor behavior

## a. Number of additional visitor-use restrictions

- i. Description: Current visitor use restrictions
  - 1. Group size for Backcountry Camping: 8 people per permit
  - 2. Number total people backcountry camping; west zone 24 persons, east zone 12 persons
  - 3. Threatened & Endangered species closures; 36 CFR 1.5
  - 4. No livestock
  - 5. No fires or grills; camp stoves only.
- ii. Measure: Additional visitor-use restrictions created will be compiled.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

**TREND ANALYSIS****Trend in Measure**

The first year's monitoring will provide a baseline for the wilderness character of the Fire Island Wilderness and will not imply if conditions are “good,” “bad,” or “desired.” The baseline is simply the reference point from which change will be measured over time. Data collected from the protocols are inputted to the Wilderness Character Trend Worksheet and compared to the previous year. Using the framework ranking system, the measures will be compared to determine whether there is an increase (↑) or decrease (↓) in Wilderness character (WC). When the ranking indicates an increase in WC, the trend measure added to the worksheet is +1; a decrease is -1; and no change is a zero (0).

Quality	Indicator	Measures	Ranking
<b>Untrammelled</b> Wilderness is essentially unhindered and free from modern human control or manipulation	1. → Actions authorized by the NPS-FIIS that manipulate the biophysical environment	a) → Number of actions to manage plants, animals, pathogens, soil, water, or fire b) → Number of natural fire starts that receive a suppression response	a) → ↑ in # of actions = ↓ in WC b) → ↑ in # of actions = ↓ in WC
	2. → Actions NOT authorized by the NPS-FIIS that manipulate the biophysical environment	a) → Number of unauthorized actions by other Federal or State agencies, citizen groups, or individuals that manipulate plants, animals, pathogens, soil, water, or fire	a) → ↑ in # of actions = ↓ in WC

Measure	Previous Year	Current Year	Trend in Measure	Trend in Indicator	Trend in Question	Trend in Quality
<b>Untrammelled Quality</b>						
1a. Management Actions	3	5	-1	-1	0	0
1b. Fire Suppression	0	1	-1			
2a. Unauthorized Actions	3	1	1	1		

Table 3: An example of inputting measures to the worksheet for Untrammelled Quality using the ranking from the framework

**Trends in Indicator, Question, and Quality**

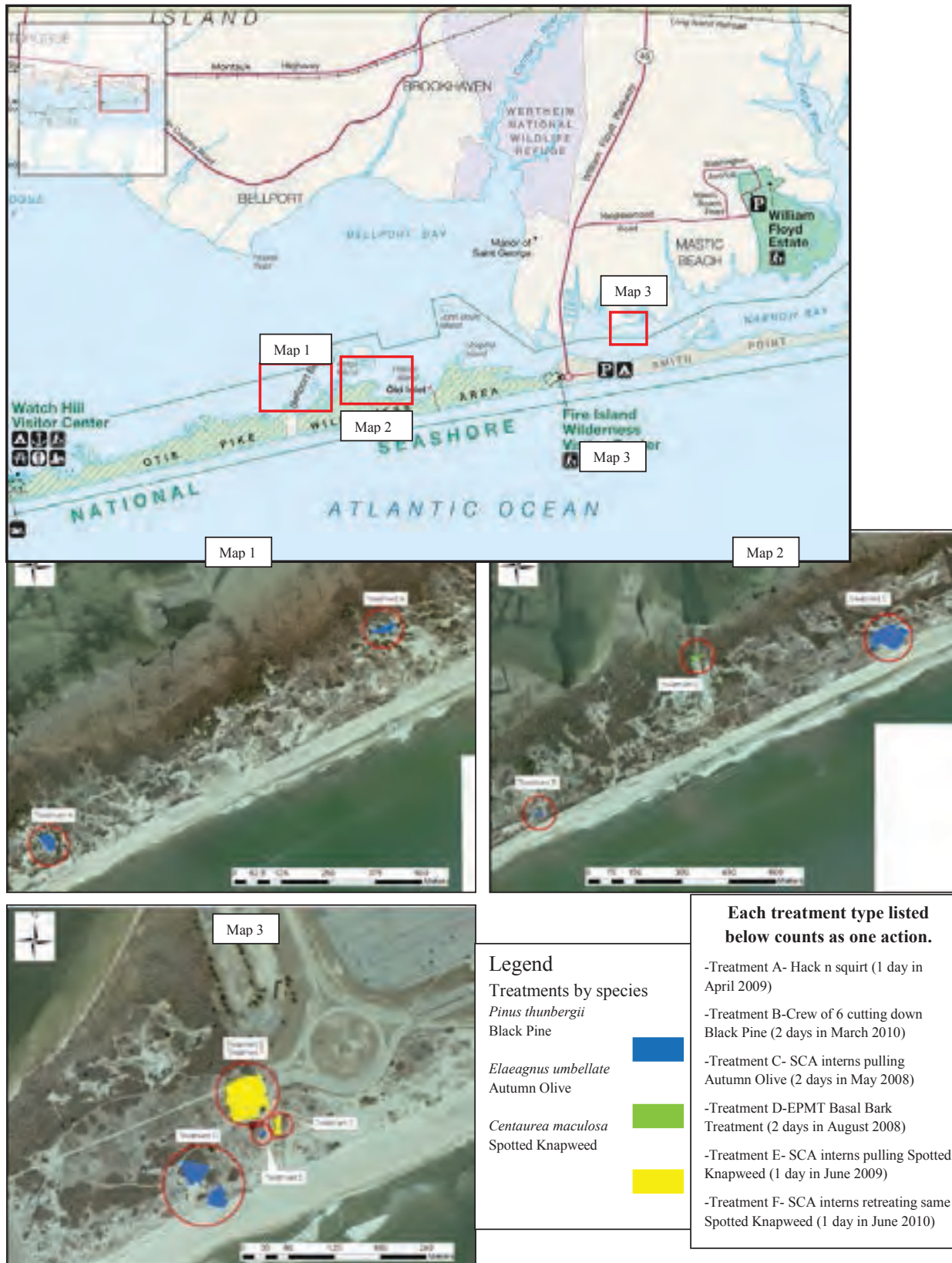
If the indicator has only one trend, then the indicator is same as the measure. If the indicator has more than one trend, trends from each measure are summed to find a numerical value. If the value is a positive number, then the indicator is a +1. When the sum is a negative number, the indicator is a -1, and if the sum is zero the indicator is a zero, signifying an offsetting stable. Trends in question and quality are calculated using the same procedure.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

**Trend Assessment**

Along with the Fire Island Wilderness Character Worksheet, a narrative will provide information about the wilderness conditions, circumstances, and context that affect the interpretation and use of the trends and results of the wilderness character-monitoring protocols. The narrative will add qualitative information to complement the data.

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014



**Protocol 1: Criteria for documenting actions related to invasive species removal**

The protocols state that every action to eradicate non-native invasive plant species within a defined area during a given period of time will be documented.

However, properly identifying a single action from the definition above can be difficult. Each action will be defined by the land manager who is implementing the effort. To help with identifying individual actions, we have defined all the eradication efforts within the Wilderness 2008-2010. The examples on the maps above illustrate the proper and consistent method of identifying an action.

**Explanation of each method:**

Each treatment below has been defined as one action.

Treatment A was a "hack and squirt" treatment carried out in the Wilderness on one day in April of 2009 to test the effectiveness of this herbicide-based method. This will be considered one action even though treatments were carried out in two different areas

Treatment B was carried out with a crew of six during March of 2010. This was a two-day effort testing the effectiveness of directly removing black pine trees by cutting them down. This will be considered one action even though it took two days to achieve.

Treatment C was performed by a crew of SCA interns, who spent two days pulling Autumn Olive in May 2008. This will also be considered one action even though it took two days.

Treatment D was completed by the Northeast Exotic Plant Management Team (EPMT), who treated black pine trees using a basal bark method. This effort took two days and was implemented in numerous areas of the Wilderness. This also will be considered one action even though it took two days and was carried out in multiple areas.

Treatment E was performed by a crew of SCA interns, who spent one day pulling Spotted Knapweed in June 2009.

Treatment F was a retreatment of the same Spotted Knapweed by a crew of SCA interns on one day in June 2010. Treatments E and F were considered two actions, because they were two different efforts in two different field seasons.



## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

**Protocol 2: Measuring indigenous species that are listed as threatened, endangered, sensitive, or of concern**

Scientific name	Common name	Park Status	Currently monitored? (Y/N)	Management Priority Details
<i>Amaranthus pumilus</i>	Seabeach amaranth	Present in park	Y	Global rank: G2 Federal: threatened NY State: endangered
<i>Polygonum glaucum</i>	Seaside knotweed	Present in park	Y	NY State: rare
<i>Kinosternon subrubrum</i>	Eastern mud turtle	Present in park	N	Global rank: G5 NY State: endangered
<i>Charadrius melodus</i>	Piping plover	Present in park	Y	Federal: threatened NY State: endangered
<i>Sternula antillarum</i>	Least tern	Present in park	Y	Federal: endangered (only interior U.S populations) NY State: threatened
<i>Sterna dougallii</i>	Roseate tern	Present in park	Y	Federal: endangered NY State: endangered

**Table 4: Indigenous Species Listed as Threatened, Endangered, Sensitive, or of Concern**

Six species listed as threatened, endangered, sensitive, or of concern indigenous to the Fire Island Wilderness are listed in Table 4. Five of these species have been confirmed and are annually monitored by NPS staff: seabeach amaranth, seaside knotweed, piping plover, least tern, and roseate tern.

Two things will be ranked relative to the previous year:

- 1) The total number of these known species found within the Fire Island Wilderness;
- and
- 2) The abundance of each of these species.

**Seabeach amaranth & Seaside knotweed** surveys are conducted in mid-August by FIIS staff; data is submitted to The Nature Conservancy's Long Island Field Office and included in the Seashore's end-of-year Threatened & Endangered Species Report.

- Abundance will be measured as the number of plants.
- Ranking (relative to previous year)
  - Significantly fewer plants = -1
  - Approximately the same number of plants = 0
  - Significantly more plants = +1

**Piping plover** surveys are conducted throughout the breeding/nesting season (April through August); data is submitted to the New York State Department of Environmental Conservation and included in the park's end-of-year Threatened & Endangered Species Report.

- Abundance will be measured as the number of nesting pairs

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

- Ranking (relative to previous year)
  - Fewer nesting pairs = -1
  - Same number of nesting pairs = 0
  - More nesting pairs = +1

**Least tern & Roseate tern** surveys are conducted throughout the breeding/nesting season (June through August); data is submitted to the New York State Department of Environmental Conservation and included in the park's end-of-year Threatened & Endangered Species Report.

- Abundance will be measured as the number of nesting/breeding adults
  - Significantly fewer adults = -1
  - Approximately the same number of adults = 0
  - Significantly more adults = 1

### **Protocol 3: Standard Operating Procedure for Measuring Night Sky**

The goal of the initial night sky assessment is to acquire a representative baseline data set for the Fire Island Wilderness on Fire Island National Seashore (FIIS). Night sky quality is inventoried to determine which sites within the Wilderness have natural or pristine night sky. Standardized procedures and data elements for describing, classifying, and comparing light pollution in the park's night sky are as follows.

Using the Sky Quality Meter (SQM), collect five to ten data sets throughout the year, with as many data sets as possible collected in a period with the clearest night sky. Collecting data when this opportunity arises is important, because many natural factors can interfere with data acquisition at any time during the year (e.g., weather conditions, smoke, dust, humidity, and air glow).

For the most accurate results, it is best to take many readings using the SQM and disregard the very first reading. Because the readings are somewhat temperature dependent, the meter should be left outside for at least 5 minutes to reach ambient temperature before taking any measurements. Avoid use near lights like streetlights and in areas that are shaded by trees or structures. A rule of thumb for the SQM is to be as far from an object as it is high. Use the SQM to take readings when/where the following conditions are met:

- Moonless night
- No clouds or fog
- Sun at least 18 degrees below the horizon (astronomical twilight). It is best to wait until after astronomical twilight for total natural darkness before taking SQM measurements. To learn the time for astronomical twilight at a particular location as well as Moon phase and Moon rise and set times, see [http://www.sunrisesunset.com/custom\\_srss\\_calendar.asp](http://www.sunrisesunset.com/custom_srss_calendar.asp).
- No direct light from artificial sources reaches the detector of the device.

There are six sampling points along a transect (Burma Road) in the Fire Island Wilderness. The only reference to suggested distance between sampling points found was “a few kilometers,”

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

as luminance changes over such a distance. Sampling points were therefore separated by two kilometers to both roughly incorporate this parameter and increase the number of points within the Fire Island Wilderness (see map). Five sky brightness readings should be recorded at each point.

The SQM readings can then be used to create a map of overall night sky quality. First, the three readings at each sampling point must be averaged. This number can then be converted to estimate night sky quality using the Bortle Scale as consistent with other national parks ([http://en.wikipedia.org/wiki/Bortle\\_Dark-Sky\\_Scale](http://en.wikipedia.org/wiki/Bortle_Dark-Sky_Scale)). Once converted, device readings can be overlain in ArcMap with aerial photographs of the Wilderness in order to visualize the correspondence between ground locations and each set of sky brightness measurements.

The Seashore should continue to monitor the condition and trend of night sky light pollution within and adjacent to the Fire Island Wilderness. Data sets should be collected as often as possible, at least every five years or when nearby development or light pollution changes occur. Artificial light sources in areas such as Watch Hill, Bellport Beach, Old Inlet, and Smith Point should be modified where possible to minimize light pollution. Approved lighting and other devices are listed on the International Dark Sky Association website (i.e., Visionaire Lighting's Sahara Type 5, Size 3 is listed for lighting pedestrian and parking areas).

Point Number	GPS coordinates (UTMs, Zone 18T)	
	X (easting)	Y (northing)
1	670327	4506485
2	672071	4507455
3	673813	4508444
4	675645	4509250
5	678108	4510358
6	679289	4510900

Table 5: Night Sky Monitoring – randomly selected points (from west to east) in Fire Island Wilderness

#### Adapted from:

Birriel, Jennifer et al. (2010) Documenting Local Night Sky Brightness Using Sky Quality Meters: An Interdisciplinary College Capstone Project and a First Step Toward Reducing Light Pollution. Retrieved from: [65.118.148.196/sites/default/files/webpublications/ejaavso/v38n1/132.pdf](http://65.118.148.196/sites/default/files/webpublications/ejaavso/v38n1/132.pdf)

Depledge, M.H., Godard-Codding, C. A.J., and Bowen, R.E. (2010) Light Pollution in the Sea. *Marine Pollution Bulletin*, 60(9): 1383-1385. Retrieved from: Science Direct database.

Dark Skies Awareness: Sky Quality Meter monitoring  
[www.darkskiesawareness.org/sqm-zlpa.ph](http://www.darkskiesawareness.org/sqm-zlpa.ph)

Globe at Night  
[http://www.noao.edu/outreach/press/pr08/files/GaN\\_SQM.pdf](http://www.noao.edu/outreach/press/pr08/files/GaN_SQM.pdf)

International Dark Sky Association  
<http://www.darksky.org/mc/page.do;jsessionid=8CE4B26B82B00C243FB6CE6FB085F23C.mc1?sitePageId=119791>

## Fire Island National Seashore Wilderness Stewardship Plan –Draft July 2014

Measure	Previous Year	Current Year	Trend in Measure	Trend in Indicator	Trend in Question	Trend in Quality	Trend in WC
Untrammeled Quality							
1a. Management Actions							
1b. Fire Suppression							
2a. Unauthorized Actions							
Natural Quality							
1a. Number Listed Species							
1b. Abundance Listed Species							
1c. Number Invasive Species							
1d. Acreage Invasive Species							
2a. Ozone							
2b. Water Quality							
3a. Forest Health							
3b. Salt Marsh Elevation							
Undeveloped Quality							
1a. Authorized Development							
1b. Unauthorized Development							
2a. Authorized Use							
2b. Emergency Use							
2c. Unauthorized Use							
3a. Removal of Occupation							
Solitude Quality							
1a. Visitor Use							
1b. Negative Effects Camping							
1c. Travel Routes Actions							
2a. Travel Adjacent							
2b. Night Sky Visibility							
3a. Recreation Facilities							
4a. User Trails							
5a. Visitor-Use Restrictions							

Table 6: Wilderness Character Trend Worksheet