



Educator's Resource Guide Fire Island National Seashore



Welcome to Fire Island National Seashore!

This Educator's Resource Guide was designed by park staff and educators to help you incorporate the rich natural and cultural features of Fire Island National Seashore into classroom learning, and to help you make the most of a field trip to the barrier beach.

In this guide you will find tips on planning a field trip to Fire Island National Seashore, background on the barrier island and the plants and animals you might find, and a description of curriculum-based activities that pertain to Fire Island. Want to learn more? Visit page 10 for a list of free Fire Island-based lesson plans and page 12 for a list of print and digital resources to help you prepare for your field trip.

Fire Island is one in a chain of barrier islands located off of Long Island's south shore. This narrow cordon of sand is bounded by the Atlantic Ocean and the Great South Bay, bodies of water that constantly shape and reshape the island's ever-changing landscape. Fire Island's dynamic nature provides endless opportunities for research and learning.

The National Park Service has a long tradition of working with educators and students to inspire the next generation of park stewards. Fire Island National Seashore is a nationally significant resource and a variety of park programs and free materials are available so educators may take advantage of the unique natural and cultural features right in their backyard.

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A National Park in Your Backyard



One of more than 400 national parks across the country, Fire Island National Seashore is a unit of the National Park System that is only a short drive or ferry ride from Long Island and New York City schools. Explore three centuries of change at the William Floyd Estate, a unit of Fire Island National Seashore on Long Island, or the ever-changing barrier island, its diverse marine and terrestrial habitats, and its rich maritime history in your classroom or on a field trip using our self-guided, hands-on activities and lesson plans.

Planning a Field Trip?

Getting to Fire Island National Seashore requires planning. In the spring and fall, passenger ferries run to mid-island locations, Sailors Haven and Watch Hill, on Fire Island. The Fire Island Lighthouse is located on the west end of the island and the Wilderness Visitor Center is located on the east end. Both of these sites are accessible by bus year-round. The William Floyd Estate, located in Mastic Beach on Long Island, is also accessible by bus.

Curriculum Materials

Come explore the Seashore or bring the park into your classroom. From beach dynamics to island habitats, a variety of curriculum-based, self-guided activities and lesson plans are available to enhance your educational experience. Download *free* curriculum materials at: <http://www.nps.gov/fiis/learn/education/classrooms/curriculummaterials.htm>

Traveling Trunks

Packed with sand, shells, and rock samples, the Fire Island treasure chest is a great way to prepare for your field trip to the barrier beach or to bring the park into your classroom. A project EduBat trunk filled with hands-on activities exploring the wonders of bats is also available.

Traveling trunks must be reserved at least two weeks in advance. Please call 631-687-4780 for more information.



One Park, Five Field Trip Options



Accessible by ferry late spring and early fall:

Sailors Haven/Sunken Forest (631-687-4780)
Sailors Haven is home to a globally rare maritime holly forest, the Sunken Forest. Sailors Haven/Sunken Forest is located near the center of the Fire Island, across the Great South Bay from Sayville, New York. It offers a 1.5 mile-long boardwalk loop trail through the Sunken Forest, a seasonally staffed visitor center, snack bar, gift shop, and picnic tables. You may study the dynamic shoreline, maritime forest, or the Great South Bay on your visit.

Watch Hill (631-687-4780)
Watch Hill is located on the western edge of the Otis Pike Fire Island High Dune Wilderness, directly across the Great South Bay from Patchogue, Long Island. A small convenience store, snack bar, boardwalk nature trail, picnic area, and restrooms are available. Watch Hill is a great place to study salt marsh and bay ecosystems, barrier island evolution, and the shifting sands of the shoreline.

Important Phone Numbers

- Program Reservation: 631-687-4780
- Sailors Haven Visitor Center: 631-597-6183
- Watch Hill Visitor Center: 631-597-6455
- Park Headquarters: 631-687-4750
- Sayville Ferry Service: 631-589-8980
- Davis Park Ferry: 631-475-1665

Accessible year-round by bus:

Fire Island Lighthouse (631-661-4876)
This historic landmark and museum offers a glimpse of Fire Island and Long Island maritime history, a nature trail, and curriculum-based fourth grade education programs (by reservation only). This site is operated by the Fire Island Lighthouse Preservation Society under a cooperative agreement with the National Park Service.

Wilderness Visitor Center (631-687-4780)
The Wilderness Visitor Center is located at the southernmost end of William Floyd Parkway, adjacent to Smith Point County Park. This is Fire Island National Seashore's eastern gateway to the Otis Pike Fire Island High Dune Wilderness, the only federally designated wilderness area in New York State. Explore the effects of storms and the ever-changing shoreline, and experience undeveloped barrier beach.

William Floyd Estate (631-399-2030)
Preserved at the William Floyd Estate are 250 years of history—architectural features and artifacts from three centuries of American life. Exhibits are available throughout the house, including historical photographs of the Estate and the Floyd family. The grounds of the Estate offer a diversity of upland habitats, and tours are available year-round by reservation.

Plan Your Field Trip

From mid-May to mid-October, passenger ferries from Bay Shore, Sayville, and Patchogue on Long Island provide service to communities and National Park Service facilities on Fire Island. The Fire Island Lighthouse, Wilderness Visitor Center, and William Floyd Estate are accessible year-round by bus.

Travel by Ferry: Arrive at least 15 minutes before your scheduled departure. Limited restroom facilities are located at the ferry terminals in Sayville and Patchogue, and there are no toilets on the ferry, so please plan accordingly. Double-check the bus before you get on the ferry to avoid leaving personal items behind.

Students must remain seated on the ferry. Travel time is 25 minutes from Sayville to Sailors Haven and 45 minutes from Patchogue to Watch Hill. Please be sure to be on time for your ferry ride, both to and from Fire Island!

Travel by Bus: Please call 631-687-4780 to check on hours of operation for trips to the Wilderness Visitor Center. Parking is available at adjacent Smith Point County Park (fees collected seasonally; call ahead: 631-852-1313).

Please call 631-661-4876 to schedule field trips to the Fire Island Lighthouse, and 631-399-2030 to schedule field trips to the William Floyd Estate.

Things to Know Before You Come

Stick to the Schedule!

Make sure you share the trip schedule with all trip leaders and you allow yourself plenty of time to gather before your bus or ferry departs.

Restless for Restrooms

Please be aware that some of Fire Island National Seashore's restroom facilities are located a short walk from the area that the bus or ferry will drop you off. See the following list for site-specific restroom locations:

- Lighthouse restrooms are available in the Keeper's Quarters Museum.
- Sailors Haven restrooms are available a short, two minute walk from the ferry drop-off.
- Watch Hill restrooms are available near the visitor center and Dune Station.
- Wilderness Visitor Center restroom facilities are available seasonally at adjacent Smith Point County Park.
- William Floyd Estate restroom facilities are located in the parking lot where students are dropped off.

Be Prepared

Fire Island National Seashore is a carry-in/carry-out park—chaperones should carry a large plastic garbage bag to collect any trash generated during the field trip for disposal offsite.

Mosquitoes and ticks are found on Fire Island, and are prevalent on Fire Island during warmer weather. Be sure you are aware of your school's policies on the use and application of insect repellent and sunscreen.

The visitor centers, many boardwalk trails, and restrooms are accessible for the mobility-impaired. Please call ahead to reserve the sand wheelchair to access the beach.

Be Sure to Bring

- Hat, Long Sleeved Shirt, and Jacket
- Comfortable Shoes
- Insect Repellent and Sunscreen
- Drinking Water, Lunch, and/or Snacks
- Garbage Bags (Fire Island is a Carry In/Carry Out park)

So You Want To Be a Chaperone?



Thank you for agreeing to be a chaperone on a field trip to Fire Island National Seashore. Your cooperation and participation as a chaperone is crucial to making the trip a successful educational experience for the students.

You will be assigned up to 10 students.

We recommend one chaperone to every ten students. These students will look up to you for leadership and to set boundaries. We discourage inviting other family members as they can cause distractions to the educational component of your group's visit.

Stay with your group and follow the rules.

It is your responsibility to respect park regulations and to facilitate the same for the students in your group. Feeding, touching, or harassing wildlife is strictly prohibited. Encourage students to quietly observe wildlife from a safe distance. Do NOT pick or collect vegetation in the park. Avoid damage to plants by staying on the boardwalk nature trails and off of the dunes. Fire Island National Seashore is a "carry-in/carry-out" park; please be sure to take what you brought with you when you go, including trash generated during your trip.

Be safety aware.

Do not allow students to wander from your group or program area, or engage in dangerous behavior. Stay on the boardwalks to avoid poison ivy and ticks. If a potentially dangerous situation arises, alert the program leader immediately.

Be an active participant.

Set an example by following along with the program leader and joining activities. Enthusiasm is contagious. Stay engaged and calm, and have fun. Please no smoking, chewing tobacco, eating, or drinking (except water) during the program. Refrain from cell phone use during the program.

Guide the learning activities.

Keep students' attention focused on the program leader and help guide the learners to discovery. Encourage the students to ask questions and to listen respectfully when others are speaking. Manage behavior issues if they arise.

The National Park Service is committed to providing a stimulating educational experience for all students. Thank you for your time and effort in making the trip a memorable one.

A Barrier Island Like No Other

Shaped by Glaciers, Waves, and Tides

Fire Island is made up of sediment deposited during the last ice age. Wind, waves, and currents have moved and continue to move sediment along and across the island, shifting its position and shape over time.

Storms also shape the island, causing overwashing and breaching, which carry sediment to the island interior and bay shoreline. Breaches and inlets are natural features in the barrier island landscape that have come and gone over time, opening with powerful storms and gradually closing as sand is moved along the coast. Barrier islands provide some protection to the mainland coast from the direct impact of storm waves—which is why they are called “barrier” islands.

Fire Island is a 32 mile-long barrier island bounded on the west by Fire Island Inlet and on the east by Moriches Inlet. The Great South Bay, Narrow Bay, and Moriches Bay separate Fire Island from mainland Long Island. These bays are relatively shallow and have brackish (slightly salty) water. The width of Fire Island ranges from approximately 600 feet to over 3,200 feet. From ocean to bay, the undulating landscape includes a variety of coastal landscape features and habitats including beach face, beach berm, foredune or primary dune, secondary dune, ridge and swale habitat, maritime forest, and salt marsh.

Travel Through Time from Ocean to Bay

A walk from ocean to bay reveals the chronology of barrier island evolution—from its first emergence as a sand bar to its later development of mature maritime forests and fringing bay marshes.

Barrier islands begin as sand bars. A seed of beach grass blows in with the wind or washes in with the tide. The seed sprouts and the beach grass begins to grow in the sand. As the wind blows sand along the beach, the leaves of beach grass trap the sand and eventually a dune builds. Just by growing in this habitat, beach grass and other “pioneer plants” actually change the environment and pave the way for other types of plants to grow. This is the beginning of a process called vegetative succession.

As a result of the primary dune system and the shelter it provides, a whole different plant community exists in



Overwash in foreground caused by Hurricane Sandy in 2012 begins the vegetative succession process anew.

the backdune or swale habitat. Longer-lived, woody species thrive in the swale, such as beach plum, bayberry, bearberry, red cedar, beach heather, and pitch pine. Swale vegetation could not develop until the primary dune system was in place, providing protection from the elements.

In many places on Fire Island and especially where secondary dunes exist, like at Sailors Haven, mature maritime forest can be found north of the swale, closer to the bay shoreline. Trees like shadbush, sassafras, and American holly, and vines such as poison ivy, catbriar, and Virginia creeper are found in forests on Fire Island. Though farther from the harsh conditions of the ocean beach environment, the forest is clearly shaped by the elements. Salt spray prunes the trees and shrubs, creating a “salt spray horizon,” or the angular growth of vegetation away from the sea.

In response to storms, barrier islands slowly roll over on themselves (like a conveyor belt), migrating northward toward the mainland. This process is called barrier island evolution. Before the ocean beach that now exists, the backdune dune swale was once the ocean beach. As you walk from ocean to bay, each habitat is older than the one before it, and the plants that grow in each habitat help tell this history lesson.

Natural and Cultural History

Wild for Wildlife

One of the most exciting times to view wildlife on Fire Island is during migration. In September and October, thousands of birds and monarch butterflies make a temporary home on the barrier beach as they rest and feed along their southbound journey. Fire Island's sandy shores, thicket, forest, and marsh provide diverse habitat for these long-distance travelers. The island's location along the Atlantic Flyway make it an attractive stopover for approximately one-third of North America's bird species.

In winter, waterfowl from more northerly climes can be found in the water around Fire Island. The chilly season is also a good time to see snowy owls scanning open habitat for their small mammal prey or to encounter seals hauled out on the beach. Red fox and white-tailed deer may be observed year-round.

A myriad of fish can be found in the salty waters off Fire Island including Atlantic silversides, killifish, flounder, striped bass, and blue fish. Shells tossed ashore by the waves help tell the story of life beneath the water's surface. You may find bivalves like clams and mussels, blue or spider crabs, sea stars, or horseshoe crabs on shore or in the high tide line.



Whether you come to see land animals or marvel at marine life, please do so from a safe distance and help keep wildlife wild.

Three Centuries of Change

Two hundred and fifty years of history are preserved at the William Floyd Estate, which contains architectural features and artifacts from three centuries of American life.

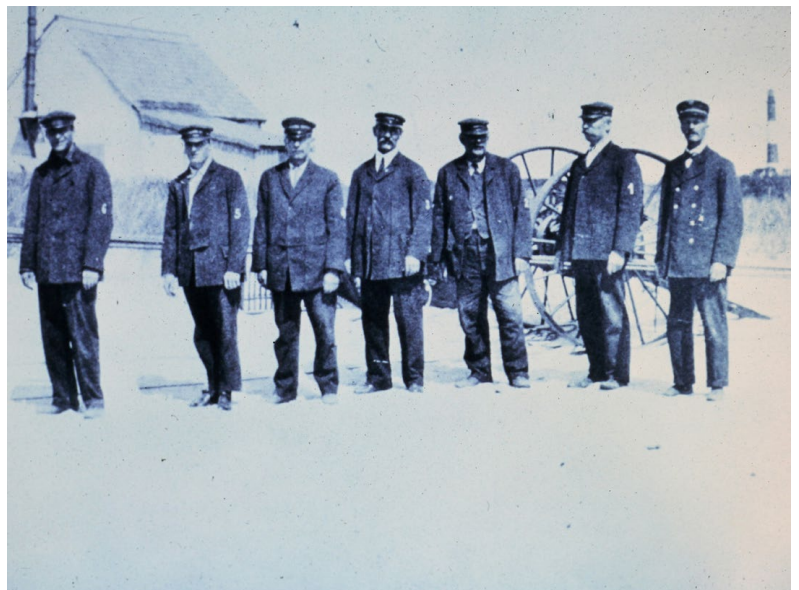
The Estate, which was authorized as an addition to Fire Island National Seashore in 1965, is located on the mainland of Long Island in Mastic Beach, New York. The estate contains the ancestral house, grounds, and cemetery of the William Floyd family. William Floyd, a Revolutionary War general and a signer of the Declaration of Independence, was born in the house in 1734.

The 25-room "Old Mastic House," the twelve outbuildings, the family cemetery and the 613 acres of forest, fields, marsh and trails all graphically illuminate the layers of history. Wildlife found here include the Eastern box turtle, spring peeper tree frog, white-tailed deer, great horned owl, and a variety of waterfowl and songbirds.

Maritime Heritage

Before the days of sonar or GPS, lighthouses played a critical role in safely guiding boats and ships to harbors around the world. Ships filled with goods for U.S. markets and people seeking new opportunities traveled across a perilous ocean to reach New York Harbor. Constructed in 1858 at 168 feet tall, 192 steps high, with a beam of light seen 23 miles out at sea on a clear night; the Fire Island lighthouse was the first coastal marker for ships crossing the Atlantic Ocean.

The Lighthouse Tract, a historically rich area encompassing approximately 82 acres surrounding the Lighthouse, was the former site of the first of Fire Island's seven US Life Saving Stations. This area was later the site of the grand Surf Hotel and an eight-story Western Union Telegraph tower.



The precursor to the US Coast Guard, the US Life Saving Service operated seven stations on Fire Island until the early 1900s.

Common Plants of the Seashore



DUNE



American Beachgrass
Ammophila breviligulata

SWALE



Beach Heather
Hudsonia tomentosa

FOREST



American Holly
Ilex opaca

SALT MARSH



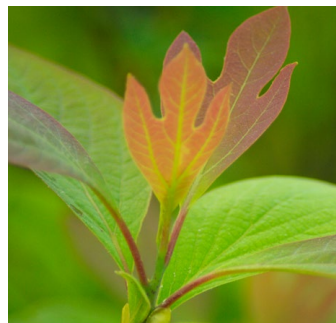
Rose Mallow
Hibiscus palustris



Beach Pea
Lathyrus japonicus



Beach Plum
Prunus maritima



Sassafras
Sassafras albidum



Smooth Cordgrass
Spartina alterniflora



Seaside Goldenrod
Solidago sempervirens



Eastern Red Cedar
Juniperus virginiana



Poison Ivy
Toxicodendron radicans



Glasswort
Salicornia depressa

Common Animals of the Seashore



Mammals

More than 30 species of mammals either visit or live on Fire Island. These mammals range in size from 40-80 ton finback whales and other marine mammals—which occasionally swim close to shore or wash up on the beach—to the tiny masked shrew, which though rarely seen, is very common on Fire Island. White-tailed deer and red fox are more commonly observed.



Marine Life

Depending on the tide—and the season—you may find a variety of marine life on or near Fire Island's ocean and bay shorelines, including fish, crustaceans, seahorses, horseshoe crabs, and aquatic mammals such as dolphins, whales, and seals. Be sure to bring a seine or dip net and water shoes during warmer weather to discover the wonders of Fire Island's waters.



Birds

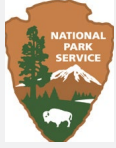
Approximately one-third of all North American bird species have been recorded on Fire Island. It's location along the Atlantic Flyway and diverse array of habitats make Fire Island the perfect place to find our feathered friends. Spring and fall are great times to look for migrating shorebirds, songbirds, and hawks overhead, and winter is a great time to see waterfowl. We recommend you bring binoculars when you visit—you never know what you might see!



Reptiles and Amphibians

From turtles (on land and in the sea!) to snakes to frogs, Fire Island has it all. These species exhibit a range of adaptations and can inhabit a variety of habitats. Over 30 species of reptiles and amphibians have been documented on Fire Island, and even more species have been recorded at the William Floyd Estate, a unit of Fire Island National Seashore on Long Island.

Learn More! Fire Island has a diversity of marine and upland habitats that support a wide variety of plants and animals. For more information, please visit www.nps.gov/fiis or follow our nature notes on Facebook (www.facebook.com/FireIslandNPS) or Twitter (www.twitter.com/FireIslandNPS).



National Park Service
U.S. Department of the Interior

Fire Island National Seashore Curriculum-Based Activities

Fire Island National Seashore can be used as an informal classroom, one with which you can utilize the park's natural and cultural features to meet your curriculum needs—whether in the classroom or on a field trip to Fire Island.

Find these activities, lesson plans, and more at www.nps.gov/fiis/forteachers

FREE ACTIVITIES & LESSON PLANS

Grades K-2

- Basic Needs of Animals

Grades 3-5

- Understanding Adaptation

Grade 5

- The Wind, Waves & Wide Open Sea

Grades 8-12

- Considering Climate Change:
Fire Island and Storms
- Understanding Succession
- Sorting Sand
- The Wind, Waves & Wide Open Sea
- Shape-Shifting Shoreline

Traveling trunks packed with materials from Fire Island are also available. If you are within Suffolk County, we may be able to deliver the chest to your school accompanied by a park ranger who will introduce the wonders of Fire Island. There is no charge for this service or for borrowing the traveling trunks.

To access complete lesson plans or for more information, please visit www.nps.gov/fiis/forteachers or call 631-687-4780.

Free Fire Island Activities

Basic Needs of Animals

Grades: K–2

In these activities, students learn about the basic needs of animals—food, water, shelter, and air. The pre-visit classroom lesson (30 minutes) includes an introduction to the basic needs through a book reading and short video. On a field trip (optional, 1hr) to Fire Island National Seashore, students discover the wildlife that live by the sea, including shorebirds, mollusks, and arthropods, and complete a guided note-taking worksheet based on their observations. During the post-visit classroom activity, the students complete a report on their assigned animal (30 minutes).

Understanding Adaptation

Grades: 3–5

An adaptation is a specialized characteristic that a plant or animal has that enables it to survive in the environment. In this lesson, students explore adaptation by observing barrier island plants and animals as they walk from ocean to bay on Fire Island. The pre-visit classroom lesson (40 minutes) introduces students to the concept with an activity identifying adaptations of common plants and animals. While visiting Fire Island (2 hours), students explore the different habitats and complete a worksheet, documenting the plants and animals and how they are adapted to the conditions there. During the post-visit classroom activity (40 minutes), students work in groups to create a fantasy creature that will be successful in a barrier island habitat.

The Wind, Waves, and Wide Open Sea

Grades: 5–12

This 45-minute on-site activity measures wind and wave conditions which are the fundamental forces that shape the beach. These parameters allow us to monitor and predict shoreline change and to understand the dynamic nature of barrier islands. In groups of four, students collect and record data and observations on the beaches of Fire Island. The groups then synthesize the data and discuss the relevance of the data collected.

Shape-Shifting Shoreline

Grades: 8–12, Earth Science

This activity explores the slope and shape of the beach using surveyor's profile equipment. Understanding these parameters and how they change through time is important to defining sustainability in a dynamic coastal environment. Students work in teams of five to measure the elevation of the beach along a transect. Data collected is then processed, graphed and the significance discussed by the students.



Sorting Sand

Grades: 8–12, Earth Science

This lesson consists of two simultaneous activities that examine sand properties on the beach of Fire Island. Students work in two teams of three to study sand grain composition and distribution at different locations on the beach. After the activities, the teams come together to share and synthesize data and to discuss the relevance of the data collected. An understanding of sand composition and distribution is fundamental to understanding barrier island dynamics.

Understanding Succession

Grades: 9–12, Biology and Environmental Studies

Ecological succession is a process in which an ecological community changes over time. In this lesson, students have the opportunity to observe ecological succession by observing and identifying plants as they walk from the ocean, through the swale and maritime forest, to the bay at Sailors Haven on Fire Island. Students first learn about the different types of succession in the classroom and label a cross-section “map” of the Fire Island (40 minutes). While visiting Sailors Haven, students work in groups of two or three, identify plants and answer questions as they walk from the ocean to the bay (2 hours). During the post-visit classroom lesson (40 minutes), student groups work together to create a class version of the map, labeling the various plants and where they are located on Fire Island. In addition, students review some of the wildlife found on Fire Island. Specifically, students learn about the impact white-tailed deer are having on the island’s maritime forests as well as the rest of Fire Island National Seashore.

Considering Climate Change: Fire Island and Storms

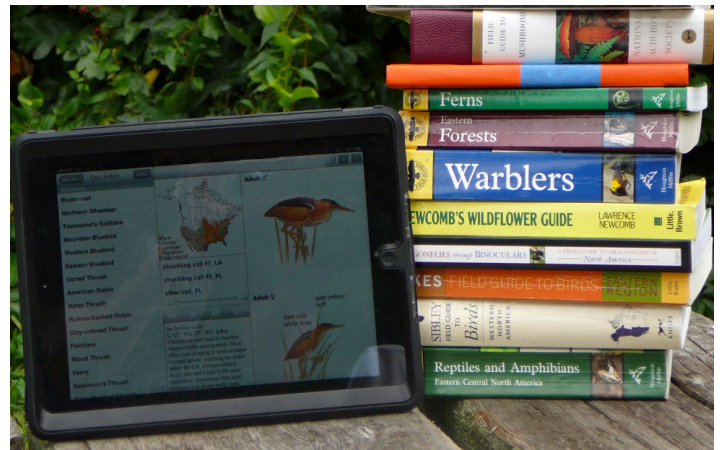
Grades: 9–12, Biology and Environmental Studies

The main focus of this lesson is that of an inquiry-based dissolved oxygen lab in which students create their own algal blooms and measure dissolved oxygen (DO) levels in sample of water containing various salinities and temperatures. Prior to the lab, students learn about barrier island dynamics on Fire Island through a PowerPoint presentation and video. The PowerPoint also contains information about global warming and climate change, with a focus on Hurricane Sandy. Accompanying homework (with answer key) helps teachers assess the knowledge of their students at the end of each presentation. At the conclusion of the lab, students learn about the breach that occurred in the Fire Island Wilderness as a result of Hurricane Sandy. Students learn about the controversy over closing of the breach by engaging in a reading of an article and with an optional field trip to the breach.

Learn More: A Fire Island Bookshelf

Web References

- Fire Island National Seashore Website
<http://www.nps.gov/fiis>
- National Park Service: Explore Nature
<http://www.nature.nps.gov/>
- SUNY Stony Brook: The Great South Bay Project
<http://po.msrb.sunysb.edu/GSB/>
- SUNY Stony Brook: Spartina Salt Marshes
<http://life.bio.sunysb.edu/marinebio/spartina.html>
- Coastal Care Website
<http://coastalcare.org/>
- NPS Northeast Coastal and Barrier Network
<http://science.nature.nps.gov/im/units/ncbn/>
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<http://www.nefsc.noaa.gov/ecosys/ecology/FishCommunities/>



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Professional Development Opportunities for Educators

<http://www.nps.gov/fiis/forteachers/development/index.htm>

- The Teacher-Ranger-Teacher program is a professional development opportunity for educators to explore national parks and bring the nation's treasured natural and cultural heritage into the classroom.
- Free teacher workshops are offered on-site for educators and provide hands-on opportunities to learn about Fire Island National Seashore's educational resources and facilities.
- Volunteer with the National Park Service to learn more about Fire Island National Seashore and national parks across the country.