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Patchogue, New York

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Abstracts of Presentations and Posters
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Watch Hill, Fire Island National Seashore

Presentation Abstracts

Robert F. Sayre
Life-long resident of Point O' Woods and author of *Fire Island: An Environmental History*

Keynote Address: Man and Nature on Fire Island

The paper describes the human impact on Fire Island over the last two hundred years, some of the measures taken since the 1950s to mitigate it, and some of the additional measures that are needed. Initial impact was from harvesting salt hay, grazing cattle, hunting and fishing, and harvesting post oaks – activities which while exploiting the island's resources did not greatly alter it. The hotels built in the 1840s and after and the life saving stations, followed by fish factories did materially alter the landscape, but they were localized. Much broader alteration came with the communities that were started in the 1890s, although conditions were primitive and activities were limited. Communities expanded in the 1920s. The consensus was that Fire Island was barren and desolate. However, Robert Cushman Murphy's article in Natural History in 1933 praised the island's flora and fauna and distinctive natural features, calling national attention to the Sunken Forest. Renewed development after World War II brought efforts to save the Sunken Forest, both for its natural beauty and as a barrier to the Fire Island Ocean Parkway advocated by Robert Moses. Purchase of it was complete by 1962, and the board of the Sunken Forest Preserve offered it to the U.S. Government on condition that its character would never change and that there would never be a road through it, conditions that were included in Public Law 88-587, September 11, 1964, establishing the Fire Island National Seashore. An unintended consequence of the Seashore has been the enormous growth in the deer population, owing to the elimination of hunting. The paper advocates controlled hunting. It also advocates the development of environmental programs within communities to protect native species, reduce waste and noise, and improve sewage treatment so as reduce the discharge of nitrogen into the bay. It further advocates cooperation between the Seashore and the communities on other environmental issues.

Christopher J. Gobler, Ph.D
Stony Brook University, School of Marine and Atmospheric Sciences

The influence of benthic suspension feeders on the occurrence of harmful algal blooms in shallow estuaries

The shallow and often poorly-flushed nature of many estuarine systems can make them susceptible to outbreaks of harmful algal blooms (HABs). Historically, many shallow estuaries had been dominated by benthic suspension feeders that were capable of rapidly filtering the water column and preventing the accumulation of algal biomass. In recent decades, overfishing, habitats loss, and hypoxia have diminished suspension feeder populations and may have, in turn, influenced the occurrence of some HABs. This presentation will focus on the key role suspension feeders can play in regulating phytoplankton blooms in shallow estuaries. Specific examples from NY estuaries will include the abilities of the Northern Quahog, *Mercenaria mercenaria*, the dwarf surf clam, *Mulinia lateralis*, and the slipper shell snail, *Crepidula fornicata*, to feed on the brown tide alga, *Aureococcus anophagefferens*, and the red tide-forming dinoflagellate, *Cochlodinium polykrikoides*. Data indicates that the differential ability of each filter feeder to consume these HABs combined with the temporal and spatial dynamics of their populations has influenced the occurrence of blooms events in NY during the past 12 years. Finally, negative feedback loops that are established when estuarine productivity shifts from the benthos to the pelagic zone will be discussed.

Lindsay Ries
Wildlife Biologist, Fire Island National Seashore

Monitoring for secretive marsh birds on Fire Island

Marsh birds have been identified as a vital sign, or ecological indicator, by the Northeast Coastal Barrier Island Network (NCBN) - an Inventory and Monitoring eco-regional network of the National Park Service. Fire Island National Seashore is one of several parks in the NCBN and is known to provide important habitat to salt marsh breeding bird species. Marsh bird populations (rails, bitterns, sparrows, etc.) in eastern North America are high conservation priorities in need of site specific and regional monitoring designed to detect population changes over time. In the spring/summer of 2011, Fire Island National Seashore biologists utilized existing protocols to begin long-term monitoring of marsh birds at 7 survey points within the boundaries of the park. These protocols were set forth by the collaborative initiative for all states along the New England and Mid-Atlantic Coast (Bird Conservation Region 30), the Saltmarsh Habitat & Avian Research Program (SHARP). Point-Count/Callback surveys with broadcast calls for secretive marsh bird species, as well as a vegetation survey for each point, were conducted. This presentation will discuss the details of this new long-term monitoring program.

Nancy Karraker, Ph.D
Department of Natural Resources, University of Rhode Island

Population ecology and impacts of environmental change on the eastern box turtle population at the William Floyd Estate

Eastern box turtles (Terrepene carolina carolina) are broadly distributed in North America, but populations are increasingly being impacted by habitat degradation, land development, collection, chemical contaminants, and road mortality. While several long-term studies have been conducted on this species, few span the time scale of the study at the William Floyd Estate. A relatively large population of box turtles occurs there and has been the subject of research for over 100 years. John Treadwell Nichols, former Director of the American Museum of Natural History, conducted a mark-recapture study from 1911 to 1958 and marked over 1500 turtles. National Park Service employee Richard Stavdal's marked over 700 turtles from 1980 to 2006, which also included a joint National Park Service and Wildlife Conservation Society survey effort in 2002 that marked 26 turtles. In 2010, I led a research group which began conducting intensive surveys of the population and entry of all data collected since 1911. In 2010, we documented 103 box turtles, of which 28% had been previously marked (recaptures). In 2011, we found 113 turtles of which 46% were recaptures. Sex ratios were strongly skewed toward males, a population characteristic that is often indicative of declining populations. Greater than 30% of turtles exhibited evidence of previous injuries in both years. An intensive survey will again be conducted in 2012, and then analysis of the entire data set will be undertaken. We will examine relationships between land use change around the William Floyd Estate and particular aspects of the turtle population, such as sex ratio, individual body size, and population size. We plan to initiate a new radio-telemetry project in 2013 to determine the environmental factors that trigger hibernation in fall and emergence in spring so that we can provide more accurate guidance for vegetation management and maintenance activities. Finally, we will develop a long-term monitoring program for this population, as it is an important ecological and cultural resource at the William Floyd Estate.

MJ James-Pirri, Ph.D
Graduate School of Oceanography, University of Rhode Island

Co-Author:
Patti Rafferty

Understanding horseshoe crab population dynamics in New York and New Jersey National Parks

The American horseshoe crab (*Limulus polyphemus*) is an important component of the marine ecosystem and a valuable socioeconomic species. Crabs are harvested commercially for bait and by the biomedical industry, which produces a critical pharmaceutical product from their blood. Coastal National Parks in the New York and New Jersey area all have actively spawning populations of horseshoe crabs; however, little is known about population dynamics in terms of spawning densities, spawning sex ratios, or egg densities. In 2012, horseshoe crab monitoring and tagging, in conjunction with the USFWS Cooperative Tagging Program, will begin at Fire Island National Seashore, Sagamore Hill National Historic Site, and Gateway National Recreation Area. This project will provide information on regional horseshoe crab populations that is essential for the conservation and management of this species. An additional goal for this project is the development of park specific, long-term citizen-based monitoring programs to sustain future data collection. Results from pilot surveys conducted at Fire Island National Seashore in 2011 will be discussed.

Erica Patenaude
Biologist, Northeast Coastal Barrier Network

Co-Author:
Sara Stevens

Monitoring salt marshes at Fire Island National Seashore

Fire Island National Seashore is one of the eight National Parks that comprise the Northeast Coastal and Barrier Network (NCBN). One of the primary goals of the Network is to conduct long-term monitoring of park ecosystems in order to better understand the condition of park resources and to provide reference points for comparisons with other, altered environments. Salt marsh communities can serve as biological indicators of the overall ecological health of parks because they often integrate problems and processes associated with both estuary and upland ecosystems. Salt marsh vegetation and nekton respond to environmental changes such as sea-level rise, introduction of exotic species, watershed development, and other natural and human induced changes and thus are desirable for inclusion in coastal monitoring programs. Early detection of significant changes in condition, population structure, and ecological processes will allow park managers to take steps to restore or maintain ecological integrity of park resources. The NCBN is currently monitoring vegetation, nekton, and surface elevation in salt marshes at Fire Island NS. As monitoring continues, the Network will be able to assess changing conditions within the park and place these changes in a regional context by comparing trends and values with other parks.

Erica Lentz, Ph.D
Coastal Geomorphologist, USGS

Co-Authors:
Cheryl Hapke
Rachel Hehre
Hilary Stockdon

Fire Island dune-beach evolution since 1969: Understanding controls and measuring changes to the system

An analysis of dune and beach morphology change has been conducted over a range of timescales at Fire Island, New York. Historical topography, generated with digital stereo-photogrammetric processing using aerial photos from 1969, and lidar surveys from 1999 and 2009, were used to generate 3D surfaces from which features such as the shoreline, dune crestline, and dune toe were extracted. This longer term analysis, which includes measurements of net shoreline movement, net dune crestline movement, beach width, profile volume, and beach slope, shows distinct differences in behavior of the eastern and western segments of the island over 30 and 40 year periods. In the recent decade (1999 - 2009), an along-island trend of dune progradation was observed, which may be in part be related to a gradual post-storm recovery of the dune system following an intense series of storms that occurred in the early 1990s.

To better understand the drivers of change, wave run-up was parameterized for typical storm conditions and used to identify areas likely to overwash during storm events. Overwash persistence, defined as overwash predicted during more than one time period, was compared with morphology change to assess the influence of the wave climate on coastal evolution and behavior. A strong correlation between overwash persistence and landward translation of the dune-beach profile was observed in the eastern segment of the island; incidences of

overwash were less well correlated with morphology changes along western Fire Island, where there is likely more influence from the offshore geologic framework and ongoing replenishment and scraping activities.

In addition to the longer-term trends, event-driven morphologic change related to Tropical Storm Irene in 2011 was also measured. Post-storm analyses indicate that there was a substantial building of the upper beach, which has continued the shorter-term progradational trend of the dunes observed in 1999-2009. Beach scraping, which occurred in several communities following the storm, compounded the building of the upper beach observed after the storm. Although initially thought to have resulted in increased sediment volumes, it instead appears the storm redistributed sediment along the profile rather than substantially adding to it.

Cheryl Hapke, Ph.D
Coastal Geomorphologist, USGS

Co-Authors:
Bill Schwab
Paul Gayes
Erika Lentz

Coastal dynamics at Fire Island: Connecting inner shelf geology, processes, and trends of shoreline change

The shoreface and inner continental shelf off the Fire Island barrier-island system have a diverse alongshore morphology, ranging from relatively smooth and steep in the east to a shallower concentric outcrop or lobate sediment deposit in the central portion to a series of shore- oblique sand ridges along western Fire Island. Recent geophysical surveys by the U.S. Geological Survey (USGS) of the inner shelf have provided higher resolution data than previously existed of the variable nearshore, allowing for improved understanding of how the antecedent geology potentially influences the long-term response of the beach.

Both recent and previous assessments of shoreline change at Fire Island clearly show three distinct zones of change that appear to spatially correspond to the variable morphology of the inner shelf (eastern, central and western subregions). Updated analyses of long-term shoreline change rates, measured over 78 years (1933-2011), show that in the eastern subregion the shoreline is dominantly erosional with an average rate of shoreline change of -0.79 m/yr. In the central subregion, the average rate of shoreline change is 0.24 m/yr, indicating a sustained accretional trend. In the western subregion, the patterns of shoreline change are highly variable and the average shoreline change rate is essentially zero (-0.12 m/yr, below the range of uncertainty of +/- 0.2). A finer-scale time series analysis of shoreline change along the island shows that across all subregions, zones of erosion and accretion, which are relatively persistent through time, have a spatial length scaling on the order of 3-4 km..

The interaction of waves with features on the inner shelf, and nearshore sediment movement and availability, are poorly understood, but it is likely that the larger-scale zonation of coastal change along Fire Island is related to a combination of these processes. In addition, the smaller-scale but persistent variation in the shoreline change patterns alongshore is likely related to the nearshore bar system. Recently collected, nearshore bathymetry and camera

data show that the bar has well-defined highs and lows that appear to remain relatively stationary. The highs and lows can control the variability of wave energy reaching the beach and therefore exert an imprint on the patterns of shoreline change. The USGS is currently engaged in a large-scale, multi-year, interdisciplinary project to observe and model coastal processes. The outcomes of this effort will contribute substantially to our understanding of how coastal processes drive change at Fire Island.

Norbert Psuty, Ph.D
Professor Emeritus,
Rutgers University
Institute of Marine and Coastal Sciences

Co-Authors:
Monica Patel
Ouin Robertson
William Hudacek
Andrea Spahn
Robert Koch

Development of the geomorphological map of Fire Island National Seashore

The Geologic Resources Division of the U.S. National Park Service is charged with producing Geological Base Maps for approximately 270 National Parks. However, coastal parks tend to have a simplistic geological categorization: Holocene sands. Therefore, rather than geology, the mapping effort in coastal parks has been directed toward geomorphology, the production of a map depicting the surface topographical character of the park. We are in the process of producing this map for Fire Island National Seashore. Our approach is to generate land surface categories based on the geomorphological evolution of the barrier island, incorporating ancestral and modern stages in coastal barrier island and coastal dune development. And, although the focus is on the natural evolution of Fire Island's geomorphological features, human manipulation of the surface topography adds another variable to the mix of drivers shaping development of the land surface. In addition to the conventional resources of established scientific literature and recent aerial photography, we are using 2009 Light Detection and Ranging (LiDAR) data sets to produce high resolution Digital Elevation Models (DEMs) of the surface, both first-return and bare-earth models. The LiDAR-derived DEMs and their products provide a high resolution database that is incorporated into a geospatial information system (GIS) environment and manipulated to display the horizontal and vertical attributes of the surface topography. This process will yield a detailed and relevant geomorphological map of Fire Island National Seashore that will be useful for coastal resource management.

Rafael Cruz
International Volunteer Intern,
Environment for the Americas

Engaging Latinos in informal science education

The Latino population is the fastest growing minority in the United States but the least likely to visit National Parks. In 2009, Environment for the Americas received a 3-year grant from the National Science Foundation to study the barriers to participation in nature and science programs and develop tools that organizations may use to better reach this audience. Fire Island National Seashore (FIIS) was one of several study sites chosen to be a part of this study. The goals of the project were to: 1) Identify and reduce the barriers to Latino participation in informal science education; 2) Provide effective tools to assist educators in connecting Latino families with science education, and; 3) Broadly disseminate these tools to agencies and organizations challenged to engage this audience in informal science education. National Junior Ranger Day is an annual event at Fire

Island National Seashore, and this event was used as the mechanism for examining participation in informal environmental and science education. This presentation will provide an overview of the entire project, a discussion on effective outreach strategies and practical considerations which were identified to engage Latinos in programs and events at FIIS.

Jason Flynn
Visitor and Resource Protection Park Ranger, Fire Island National Seashore

Using the "keeping it wild" framework to develop a wilderness character monitoring protocol for the Otis Pike Fire Island High Dune Wilderness

This presentation will summarize wilderness character protocol development for the Otis Pike Fire Island High Dune Wilderness. This wilderness located within the boundaries of Fire Island National Seashore is within 60 miles of New York City and the smallest wilderness unit administered by the National Park Service. We used the "Keeping It Wild" framework (Landres et al. 2008a), which is based on the four qualities of wilderness character: untrammeled, natural, undeveloped, and solitude or primitive and unconfined recreation. Several indicators and subsequent quantitative measures were chosen for each quality based on the needs and conditions of this particular wilderness area using existing monitoring programs and databases as much as possible. The process of developing a wilderness character monitoring protocol helped staff view wilderness holistically and reflect on best management practices for preserving wilderness character as mandated in the 1964 Wilderness Act. Our work also provides other wilderness areas administered by the National Park Service (NPS) with an example of how one team interpreted wilderness character for their site and, ultimately, expanded their understanding of wilderness stewardship.

Field Trip Presentation Abstracts

Patti Rafferty
Coastal Ecologist,
NPS Northeast
Regional Office

Co-Authors:
Karl F. Nordstrom
Nancy L. Jackson
Eugene J. Farrel
Taylor Cayes
Ruth Coffey

Restoring of bayside sediment transport processes at Fire Island National Seashore

In November, 2011 a feeder beach was constructed by placing sand dredged from the Sailors Haven marina over intertidal bottomland on the west side of the marina. The feeder beach is designed to supply sediment to the longshore transport system and to restore bayside sediment transport processes. In addition, the feeder beach conserves sediment within Great South Bay that would otherwise be removed by upland disposal during dredging of the Sailors Haven channel. The project is also expected to protect the Sunken Forest, a globally rare maritime forest, from accelerated rates of erosion that are caused by dredging and shoreline armoring. The effectiveness of this feeder beach as a method to restore bayside sediment transport processes is being evaluated by a study of beach processes and shoreline changes to determine the rates and pathways of sediment transport. Ecological effects are being assessed by monitoring nekton, invertebrates and water quality. Evaluation of this demonstration project will determine if this is an appropriate restoration technique at Sailors Haven and potentially other segments along the bay shore of Fire Island.

Jordan Raphael
Biologist, Fire Island
National Seashore

Vegetation monitoring in the Sunken Forest

When Fire Island National Seashore (FIIS) was established in 1964, the importance of the Sunken Forest was recognized in its enabling legislation. It explicitly states that, “The area known as the Sunken Forest Preserve shall be preserved from bay to ocean in as nearly its present state as possible” (PL 88-587). The Sunken Forest is ranked as a G1 or critically imperiled habitat and one of the two known old-growth maritime holly forests in the world. The forest canopy is dominated by American holly (*Ilex opaca*), Shadblow (*Amelanchier canadensis*), and Sassafras (*Sassafras albidum*). An increase in white-tailed deer (*Odocoileus virginianus*) has been seen since FIIS was established and has interrupted the natural regeneration processes within the forest.

In 1967, a number of vegetation plots were established throughout the sunken forest. These plots were resurveyed in 1986 and 2002. In 2011, FIIS staff located all the plots and resurveyed them. While the current canopy in the forest is representative of what it was when the park was established, the understory vegetation has declined dramatically. The recruitment of species that currently dominate the forest canopy is very limited and barely meets the recruitment necessary to maintain its current density. The shrubs and herbaceous layer within the forest have also changed, showing deer resistant plants species, such as black cherry (*Prunus serotina*), now dominate the understory. FIIS staff is now in the process of developing protocols for surveying vegetation within the forest by utilizing these permanent plots. With the data set that already exists we can see if and how the vegetation responds to different white-tailed deer management scenarios that may occur at FIIS.

Chris Schubert
USGS, Water Resources Division

Co-Authors:
M.P. de Vries
A.J. Finch

Nitrogen loads in groundwater entering back bays and ocean from Fire Island National Seashore

About 2.2 million people visit Fire Island each year. The arrival of summer residents and vacationers increases the population 50-fold. Wastewater from most septic systems discharges directly into the shallow (water-table) aquifer. The associated nutrients, pathogens, and organic compounds can eventually seep into back-barrier estuaries and threaten their ecological health. Elevated concentrations of nutrients in groundwater that discharges to surface waters can lead to increased production of phytoplankton and macroalgae; these, in turn, can cause oxygen depletion, declines in estuarine fish and shellfish communities, and loss of submerged seagrass habitat.

Simulations of groundwater discharge from the shallow aquifer indicate that nearly 80 percent of the total discharge enters the back-barrier estuaries; the rest discharges to the ocean or below the seabed as subsea outflow. The travel time of groundwater through the shallow aquifer to discharge zones varies with distance from the recharge area. Particle-tracking analysis indicates that the mean travel time is 3.4 years, and virtually all groundwater is younger than 20 years. Further water-level and water-quality monitoring at selected locations would allow development of management strategies to protect back-barrier ecosystems from the effects of wastewater discharging from the aquifer.

Charles Roman, Ph.D
Coastal Ecologist, NPS Northeast Regional Office, University of Rhode Island

Co-Author:
James C. Lynch
Donald Cahoon

Monitoring salt marsh elevation change using the surface elevation table (SET) and understanding marsh response to rising sea-level: A field demonstration

Over the past 60-80 years, relative sea level in the vicinity of Fire Island National Seashore has been rising at a rate of about 3-4 mm y-1 and this rate is predicted to accelerate with global warming. Marsh surface elevation must keep pace with the rise in sea level. With sea level rise greater than marsh surface elevation increase, marshes will become submerged, marsh soils become waterlogged, and plant growth becomes stressed, often resulting in conversion of vegetation-dominated marsh to mudflat or open water habitat. It appears that some marshes in the NY area are not keeping pace with the rise in sea level and are drowning (e.g., Jamaica Bay). To understand if marshes at Fire Island National Seashore are keeping pace, the National Park Service, in cooperation with the USGS, has been monitoring salt marsh elevation change for over a decade. Employing the Surface Elevation Table (SET) and Marker Horizon method we are evaluating trends in marsh surface elevation change, while understanding the many factors that are associated with the process of salt marsh development (e.g., sediment accretion, peat accumulation and decomposition, subsidence). SET monitoring is ongoing at three locations

along the Fire Island barrier (Watch Hill, Old Inlet, and Great Gun). During the SET field trip at the Watch Hill salt marsh boardwalk, the methodology will be demonstrated and findings discussed.

Poster Abstracts

P.J. Phillips
I.J. Fisher
C.E. Schubert
S.C. Fisher
J.L. Gray
W.T. Foreman

Endocrine disrupting compounds in the shallow aquifer system of Fire Island National Seashore, Suffolk County, New York

Water-quality analysis of groundwater from seven observation wells in FIIS (Fire Island National Seashore) indicate that endocrine disrupting compounds (EDCs) are present in parts of the shallow aquifer that are discharging groundwater to GSB (Great South Bay). Samples collected in or near the communities of Kismet and Robbins Rest and the developed park area at Watch Hill in the Fall of 2011 were analyzed for nutrients, hormones, and other EDCs and additional emerging contaminants (ECs). Five of the seven wells sampled in the study are in Kismet, a high-density residential area with septic systems. The three existing Kismet wells sampled in this study are along the eastern periphery of residential areas. The two wells (KB-2 and KB-1; referred to as shoreline wells) were installed in the northern littoral zone of Kismet where fresh groundwater discharges to GSB; well KB-2 was in the middle of the shoreline transect, and presumably represents the center of a plume of wastewater-contaminated groundwater discharging from densely spaced septic systems within Kismet and downgradient of the three existing wells to GSB. The temporary wells are located 1300 ft downgradient from the groundwater divide and approximately100 ft downgradient from septic systems. A sample was also collected from a well adjacent to the developed community of Robbins Rest, and the developed park area at Watch Hill.

Concentrations of EDCs are highest in samples collected from shoreline well KB-2. Concentrations of estrone (E1) and estriol (E3) were 2.5 and 4.1 ng/L (nanogram per liter), respectively, in the sample from this well. Estrogenic compounds (non-hormone compounds that can mimic the effect of estrogens) detected in this sample include 510 ng/L for bisphenol A (BPA), 2,200 ng/L for *para*-nonylphenol (PNP), and 410 ng/L for 4-*t*-octylphenol (4TO). No hormones were detected in samples collected from well KB-1, however, three estrogenic compounds were detected, including BPA (150 ng/L), PNP (290 ng/L), and 4TO (410 ng/L). By contrast, no hormones were detected in samples collected from the three existing wells in Kismet, nor were BPA or 4TO detected. PNP was detected at concentrations ranging from 140 to 450 ng/L in two of the three upgradient Kismet wells.

The elevated hormone concentrations in well KB-2 are reflected in the elevated concentrations of nutrients and ECs included in the study. Total nitrogen concentration (sum of all inorganic nitrogen species) was 18 mg/L (milligram per liter) for well KB-2 and 1.7 mg/L for well KB-1, and total concentration of all ECs measured in the samples ranged from 7,600 ng/L for well KB-2 to 4,000 ng/L for well KB-1. The concentrations of hormones and total OWCs in the sample collected from well KB-2 are similar to those found in treated wastewater effluent, suggesting that this sample is representative of wastewater-contaminated groundwater from upgradient septic systems. By contrast, total nitrogen concentration for the three other Kismet wells were all <0.5 mg/L, and total EC concentrations were all <1,000 ng/L. Samples collected from the Watch Hill and Robbins Rest wells had no detections for hormones, and concentrations of OWCs and nutrients were generally similar to the existing Kismet wells. The presence of hormones in the KB-2 well sample indicates that comparable concentrations of these estrogens should be present in upgradient groundwater. The low concentrations of ECs, nutrients, and the lack of hormone

detections indicate that the existing Kismet wells do not accurately depict the effect of septic systems on the shallow aquifer in this area.

Norbert J. Psuty
William Hudacek
Aaron Love,
Institute of Marine and Coastal Sciences, Rutgers

Jordan Raphael,
Fire Island National Seashore

Dennis Skidds,
NPS Northeast Coastal and Barrier Network

Geotemporal vectors of shoreline change along Fire Island, 2007-2011

This is the first Trend Report of the change in shoreline position along the ocean side of Fire Island, extending from Moriches Inlet to Fire Island Inlet. This first report follows the protocols described in Psuty, et al. (2010) to track the neap-tide high-tide swash line that were applied for the first time on Fire Island National Seashore in Spring 2007. Subsequent surveys were conducted semi-annually in the spring and fall until Spring 2011; they provide the temporal span for this trend report.

The Trend Report is a comprehensive compilation of the shoreline position data as well as analyses that synthesize the shoreline change data spatially and temporally, including a scientific interpretation of the trends revealed in the numerical analyses. The longer-term comparisons of trend of shoreline positions reveal changes created by differences in sediment availability and intensity of formational processes.

Jordan Raphael,
Fire Island National Seashore

Brian McDonnell
Betsy Lyman,
Northeast Exotic Plant Management Team, Delaware Water Gap NRA

The Northeast Exotic Plant Management Team control efforts at Fire Island National Seashore

The Northeast Exotic Plant Management Team (NE EPMT) has assisted Fire Island National Seashore with large scale non-native invasive plant species management and early detection/rapid response management (EDRR) since 2007. The NE EPMT helped map the Otis Pike Fire Island High Dune Wilderness Area (OPWA) and the William Floyd Estate (WFE). These maps serve as a baseline for current monitoring and management programs on FIIS. The NE EPMT has also implemented a number of non-native invasive species treatments throughout the OPWA and WFE. As of 2011, many treatments have shown to be successful.

Patti Rafferty,
Coastal Ecologist,
NPS Northeast Regional Office

MJ James-Pirri
Graduate School of Oceanography, University of Rhode Island

Volunteers monitor horseshoe crabs at Fire Island National Seashore

The American horseshoe crab (Limulus polyphemus) is an important component of the marine ecosystem and a valuable socioeconomic species. Crabs are harvested commercially for bait and by the biomedical industry, which produces a critical pharmaceutical product from their blood. Coastal National Parks in the New York and New Jersey area all have actively spawning populations of horseshoe crabs; however, little is known about population dynamics in terms of spawning densities, spawning sex ratios, or egg densities. In 2012, horseshoe crab monitoring and tagging, in conjunction with the USFWS Cooperative Tagging Program, will begin at Fire Island National Seashore, Sagamore Hill National Historic Site, and Gateway National Recreation Area. This project will provide information on regional horseshoe crab populations that is essential for the conservation and management of this species. An additional goal for this project is the development of park specific, long-term citizen-based monitoring programs to sustain future data collection. Results from pilot surveys conducted at Fire Island National Seashore in 2011 will be discussed.