

FY2017
ANNUAL ACCOMPLISHMENTS REPORT
FOR INVENTORIES AND VITAL SIGNS MONITORING
NORTHEAST COASTAL AND BARRIER NETWORK (NCBN)

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Northeast Coastal and Barrier Network FY 2017 Accomplishments Report

I. Overview

The Northeast Coastal and Barrier Network (NCBN) includes eight parks located along the Atlantic coast from Massachusetts to Virginia: Cape Cod National Seashore (CACO), Fire Island National Seashore (FIIS), Sagamore Hill National Historic Site (SAHI), Gateway National Recreation Area (GATE), Assateague Island National Seashore (ASIS), George Washington Birthplace National Monument (GEWA), Thomas Stone National Historic Site (THST), Colonial National Historical Park (COLO). These parks contain critical coastal habitat for many rare and endangered species, as well as migratory stopovers, acting as essential corridors for birds, sea turtles, and marine mammals. They also protect vital coastal wetlands, essential to water quality, fisheries, and the biological diversity of coastal, near shore, and terrestrial environments.

All NCBN parks continue to be pressured by encroaching development, intense recreational activity, and the results of climate change; sea level rise, increased storm intensity, amplified variability in surface and groundwater levels, and ocean acidification. These are expected to be among the most pressing natural resource management challenges in the near future. In addition, being within the urban sprawl of the Northeast creates additional pressure on these sensitive and often last remaining pristine ecosystems.

The NCBN Inventory and Monitoring Program, developed to provide parks with credible, defensible scientific information, will help managers and scientists track the changes that occur in condition of their park's natural resources. As part of the National Park Service's original effort to "improve park management through greater reliance on scientific knowledge," the Cape Cod Ecosystem Monitoring (CCEM) program, an NCBN park, was established to develop and implement a long-term monitoring program that would serve to aid park managers in making sound stewardship decisions. The program at CACO was established in the early 1990's as one of the few "Prototype" parks tasked with developing a monitoring program for coastal parks. As part of this process, the CCEM program adopted an ecosystem-based, issue-oriented approach for monitoring ecosystem integrity, working closely in partnership with the USGS-Biological Resources Division. CCEM developed monitoring protocols based on the issues identified in Roman and Barrett's 1999 report *Conceptual Framework for the Development of Long-term Monitoring Protocols at Cape Cod National Seashore*. Not long after, in 2000-2001, the NCBN Monitoring Program was established as part of the newly formed and funded NPS Inventory and Monitoring Program (NPS I&M). The NCBN program extended the Cape Cod CCEM program by building the Network monitoring plan on the same approach for the additional seven network parks.

The following report provides a summary of accomplishments for FY17 on inventory and monitoring projects being developed and implemented by the NCBN program. In FY17, the network received a total of \$912,300; this includes \$800,000 in Vital Signs Monitoring funding, and \$82,300 from the NPS Water Resources Division, and \$30,000 in IMD funding to support collaboration.

FY17 Summary

Vital Signs Monitoring continued in FY17 with salt marsh vegetation and nekton monitoring occurring at Fire Island NS (FIIS), and Sagamore Hill National Historic Site (SAHI). A two-person crew consisting of two Biological Science Technicians, and one Geoscientists-in-the Park intern conducted the monitoring under the supervision of Network Biologist, Erika Rocks.

Surface Elevation Table (SET) data was collected at 139 SET sampling locations, two times at each location during the year by NCBN biologist, Jim Lynch, with the assistance of other NCBN and park staff. SET data was collected in nine parks, including 2 parks (ACAD, BOHA) in the Northeast Temperate Network and 2 parks (NACE, GWMP) in the National Capital Region Network.

The network also developed and/or continued cooperative efforts with the University of Rhode Island (URI) for herpetological inventories and science communication needs, the Virginia Institute of Marine Science (VIMS) and the Seagrass Ecology Lab at SUNY Stony Brook in New York for estuarine water quality and seagrass monitoring. Ocean shoreline position monitoring continued during both fall 2016 and spring 2017 at FIIS, GATE, ASIS, GEWA, SAHI and CACO, following the network's published protocol with the assistance of park staff, a cooperative agreement with Rutgers University and Network staff.

The NCBN Program Manager, Sara Stevens, continued the management of \$21,000,000 in Hurricane Sandy projects for FIIS, ASIS, GATE and CACO.

II. Accomplishments

Inventories

Field Inventories and Inventory Products:

- Amphibian and Reptile Inventories continued at COLO and began at GATE during the spring and summer 2017 (Dr. Nancy Karraker, URI)
- Robin Baranowski entered all SAHI bird data collected by Dana Filippini in 2014-15 and wrote up a data summary report. The data report was published and is available in IRMA.

Vital Signs Monitoring

Field Monitoring:

Salt Marsh Nekton and Vegetation Monitoring (FIIS, SAHI)

- 2017 was the fifth year that salt marsh monitoring was conducted at FIIS and SAHI (initiated in 2008).
- Two Biological Science Technicians and one GIP intern were stationed at FIIS and completed the sampling under the supervision of the NCBN biologist. Data entry and QAQC for the 2016 field season was completed and the data uploaded to the datastore. Data collected during the 2017 field season has all been entered into the database and will undergo final quality control procedures this fall/winter.

- NCBN staff and USGS scientists received funding from USGS NPMP in FY13 for a three-year project entitled "Development of a Multimetric Index for Integrated Assessment of Salt Marsh Condition in the Northeast Coastal and Barrier Network." This project was completed in the spring of 2016. The manuscript was completed and published in *Estuaries and Coasts* in 2017.
- NCBN Salt Marsh Vegetation protocol is undergoing revision by the authors following peer review. This protocol is scheduled to be published by the end of 2017.
- Revisions and a 'tune-up' of the NCBN salt marsh monitoring database were completed with the help from the IMD contract with MBS in Fort Collins.

Salt Marsh Surface Elevation Monitoring (CACO, GATE, FIIS, ASIS, COLO; NETN Parks ACAD, BOHA; NCRN Parks NACE, GWMP)

- 95 SET monitoring stations at five NCBN parks (GATE, FIIS, CACO, ASIS, COLO) were sampled in the fall and spring of FY17.
- 19 SET stations at two NCRN parks (NACE, GWMP) were sampled in the fall and spring of FY17 in collaboration with the NCRN.
- 22 SET stations at two NETN parks (BOHA, ACAD) were sampled in the fall and spring of FY17.
- 6 new SET sampling stations were installed in FY17 in a marsh in Wellfleet, MA (CACO) in collaboration with the Friends of Herring River. Equipment for these installations was paid for by the Friends of Herring River and the site will be monitored by CACO and NCBN staff.
- 6 new “shallow” SET monitoring stations were installed in FY17 in two marshes in the Jamaica Bay Unit of GATE.
- 3 SETs were sampled and elevation measurements collected with a digital level and total station at 36 marsh locations as part of a long term project comparing the measurement of elevation change in a salt marsh using three different techniques.
- Water level recorders were monitored at GWMP, COLO, ASIS, GATE, FIIS and ACAD during FY17. These are being used to characterize the tidal patterns and differences in marsh flooding at the various SET sampling stations within each park.
- NCBN water level data from FIIS and GATE was uploaded to Aquarius and made available to the public through the IRMA Portal (<https://irma.nps.gov/aqwebportal/>).
- Conducted static and RTK surveys of the SETs and other infrastructure at ASIS, COLO, GATE and BOHA. Nearly finished surveying all SET monitoring stations using the guidelines and SOPs in the NCBN SET protocol.

- Permanent 1m² vegetation plots co-located with the SET sampling stations, were monitored at ASIS, GATE, FIIS and CACO.
- All NER SET data (Except CACO) through 2016 was entered and validated in the SET database. Currently working on the CACO data.
- Data from all NER sites are being migrated to a new enterprise database which will be used by all NPS Inventory & Monitoring networks that use the SET.

Ocean shoreline position monitoring (FIIS, ASIS, CACO, GATE, GEWA, SAHI)

- Shoreline monitoring (1D) continued to be collected by NCBN and Park Staff for fall and spring shorelines at ASIS, CACO, GATE, SAHI, GEWA, and FIIS. Rutgers' scientists under an NCBN/CESU task agreement continued to conduct the monitoring for the Network at GATE.
- Two GeoCorp Interns were hired by NCBN to assist at GATE to support NCBN monitoring being conducted by Rutgers U. partners. The interns collected shoreline and topographic monitoring data for the Network and Hurricane Sandy projects and assisted with data analyses and report preparation. Both interns are completing a 24 week internship.

Coastal topography monitoring (GATE, ASIS)

- Rutgers University collected data following the NCBN 2D monitoring protocol at GATE funded by NCBN, and park staff collected the data at ASIS.
- Rutgers collaborators completed a draft of the 3D monitoring protocol that went out for peer review by NCBN. This new protocol will be published in 2018 following revisions. This protocol however will not be implemented by the Network.

Marsh Bird Monitoring

- Marsh bird data was not collected at NCBN parks this year due to the lack of staff to manage the program.
- The NCBN data manager however continued to collaborate with scientists from the University of Delaware and the University of New Hampshire in the development of a marsh bird database and existing NCBN data was entered into this new system. The Network also continued to work to complete the Network's marsh bird monitoring protocol, but this is being worked on as time permits.

Forest vegetation monitoring (GEWA, THST, COLO, SAHI)

- The network shared in a cooperative agreement with the Northeast Temperate and Mid-Atlantic networks with the Schoodic Institute at Acadia NP to complete forest health monitoring in all three Network's parks this year.
- Forest health monitoring was completed for four NCBN parks this year (GEWA, THST, COLO, SAHI).

Monitoring products:

- All monitoring data is uploaded to the Data Store on an annual basis
- QAQC of the 2016 salt marsh vegetation and nekton data is complete and the 2016 data has been uploaded to the Data Store. The 2017 data have been entered into the database and verified and are now ready for QAQC.
- All NER SET data (Except CACO) through 2016 were entered and validated in the SET database. The CACO data is currently being entered and QC'd.
- SET Data from all NER sites are being migrated to a new enterprise database which will be used by all NPS Inventory & Monitoring networks that use the SET, as well as the USFWS.
- NCBN water level data from ASIS, COLO, CACO, FIIS and GATE were uploaded to Aquarius and made available to the public through the IRMA Portal (<https://irma.nps.gov/aqwebportal/>).

Water Quality Monitoring

Estuarine Nutrient Enrichment (ENE) Science Advisory Group Meeting-A meeting was held at URI with the NCBN science advisory group in April 2017 in order to discuss monitoring efforts in the parks and continue review and update the protocol as needed, with the upgrade and implementation of new YSI equipment the protocol is currently going through a number of revisions.

Detail Hired to Revise ENE Protocol

Kelly Medeiros, Cape Cod NS Hyrdotech accepted a detail with NCBN to revise and update the ENE protocol for the network. The detail is 120 days and began in August. Kelly is on the NCBN science advisory group and has played a key role in assisting the Network and our cooperators in upgrading our YSI sondes to the new YSI EXO sondes.

Field Monitoring:

Estuarine Nutrient Enrichment Monitoring (FIIS, GEWA)

- Data was collected at FIIS this year through our cooperative agreement with Dr. Brad Peterson from SUNY Stony Brook, and collected at GEWA through a cooperative agreement with Dr. Ken Moore, Virginia Institute of Marine Science (VIMS).

Seagrass Monitoring (FIIS, ASIS)

- Dr. Peterson collected seagrass data at FIIS for the sixth consecutive year, this year was funded with NCBN funding, the last four years were funded through Hurricane Sandy mitigation funds as part of the continued FIIS breach monitoring initiative. The HS funding has been spent and NCBN will continue the monitoring but back on our original biennial schedule. Seagrass data was also collected at ASIS this year by VIMS.

Monitoring products:

- Seagrass monitoring data uploaded to SeaGrass.Net

- Water quality data collected in 2016 at FIIS in connection with the NCBN Estuarine Nutrient Enrichment (ENE) Monitoring program have been entered into the central database and QCd. 2017 Data collected at ASIS, CACO, and COLO are still being entered by park staff and cooperators and are expected by the end of the calendar year.
- Cooperator, Thom Curdts from Colorado State University developed a standard operation procedure that walks users through entering, QAing and certifying continuous water level data using Aquarius.

Data Management

- NPSpecies Updates--NCBN staff worked with IMD and park staff to make additions and resolve issues with several species profiles (ASIS, FIIS); worked with WRD researchers to produce up-to-date marine fish species lists for NCBN parks.
- IRMA Updates--NCBN staff added 70 new/updated datasets to IRMA, most with associated tabular or spatial data holdings or published reports. Data Management staff also provided IRMA assistance to regional and park staff (e.g., NER GIS; CACO bat acoustic data management project), as well to as URI cooperators uploading deliverables from Hurricane Sandy-related projects.
- NCBN Data Manager worked with SHARP and UMaine developers to migrate NCBN marsh bird data into SQL Server database, develop data entry capabilities for NCBN staff and volunteers. Facilitated communication between Park and Network staff members and developers to perform QC on 2016 data before upload. Served as primary tester for database's "Collaborator" tool aimed at incorporating non-SHARP data.
- NCBN staff began collaboration with GULN, ASIS, and IMD staff on a new SQL Server database for the Network's Coastal Topography Monitoring program. The database will adhere to Data Quality Standards developed specifically for the shared Coastal Topography Monitoring Protocol, as well as all national IMD database development standards.
- Earlier this year, mapping-grade GPS/GNSS hardware/software critical to several NCBN monitoring programs was deemed to be no longer secure by DOI IT. The NCBN Data Manager collaborated with NPS GIS staff and researched and implemented a plan to acquire new GPS/GNSS receiver and controller equipment that both allowed the Network to maintain its necessary data collection workflows, but also met all DOI security requirements.

Monitoring Protocol Development

- A revised version of the Salt Marsh Vegetation protocol is complete and is in the process of being reviewed by the NER I&M Program Manager. This protocol is scheduled to be published in December 2017.

Science Communication

- “The Fire Island Wilderness Breach: Shifting Shorelines and Shoals.” Resource brief. Northeast Coastal and Barrier Network, National Park Service. 2017.
- “The Fire Island Wilderness Breach: Ecological Resilience in Great South Bay.” Resource brief. Northeast Coastal and Barrier Network, National Park Service. 2017.
- “From “Pure Science” to Park Science: How One Geomorphologist Re-invented his Research to Help Protect Coastal Communities” Resource brief. Northeast Coastal and Barrier Network, National Park Service. 2017.
- “Exploring the Woods under the Water: Dr. Bradley Peterson Examines the Resilience, of Great South Bay Ecologies after Hurricane Sandy.” Resource brief. Northeast Coastal and Barrier Network, National Park Service. 2017.
- “Getting up close and personal with the Reptiles and Amphibians of Colonial National Historical Park” Photo Story. Northeast Coastal and Barrier Network, National Park Service. 2017.

Planning/Park and Regional Integration

- In a regional collaboration with the USFWS, University of South Florida, and NOAA, the NCBN SET project lead, Jim Lynch, travelled to Naples, Florida in May 2017 to sample SET sites at Rookery Bay NERR and 10000 Islands National Wildlife Refuge. These sites were started in the early 1990s and have not been read by Jim for 10 years. New measurements were taken to update the elevation trends for collaborators at the University of South Florida, and staff at Rookery Bay NERR and 100000 Islands National Wildlife Refuge. A second trip is planned for October 2017 to re-measure the sites which were heavily impacted by Hurricane Irma.
- NCBN SET project lead, Jim Lynch, along with NCR staff, and USFWS staff collaborated on the design of a new enterprise database being developed with the help of the I&M staff in Ft. Collins, CO. This database is to be used by SET users in both the NPS and USFWS for storing, validating and analyzing SET and marker horizon data. Database is currently being beta-test by I&M SET users and is expected to go live in early FY18.
- A network of water level monitoring instrumentation was deployed at CACO, FIIS, GATE and ASIS, and maintained by Jim Lynch to enhance the NCBN salt marsh monitoring program and Hurricane Sandy modeling efforts.
- Assisted USFWS staff at Cape May National Wildlife Refuge (NJ) with sampling of marker horizon plots at their refuge.
- Assisted staff at Assateague Island National Seashore with the installation of a NOAA Continuously Operating Reference Station (CORS) which is currently online and used for processing GPS data.

- NCBN Data Manager represented the NCBN on the Resource Stewardship Strategy (RSS) Working Group for GEWA, actively contributing during monthly conference calls, reviewing draft reports, and participating in a three-day workshop at the park. Participated in regular calls, reviewed documents for GATE NRCA. Continued to work with GEWA natural/cultural resource staff and NPS paleontologists to refine and implement a protocol for monitoring paleontological at the park.

Hurricane Sandy Project Management for the NER

NCBN Program Manager, Sara Stevens, manages over \$21,000,000 in Hurricane Sandy funded projects for the Northeast Region.

Tasks Accomplished in FY17 by S Stevens for the NER:

- 26 Hurricane Sandy project Task Agreement Modifications completed to extend each project
- 28 Hurricane Sandy project reports externally peer reviewed with a minimum of three reviewers.
- Created Peer review google site: <https://sites.google.com/a/nps.gov/nps-ncbn-peer-review/>
- 112 quarterly progress reports reviewed for HS projects and uploaded to NER HS google site and CESU tracking sheet: <https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/>
- NAC CESU FY16 Annual Report completed in Jan 2017.
- Directed and Supported the following research assistants working on NER Hurricane Sandy data and project management:
 - 2 URI Research Assistants – providing data review and support for NER submerged mapping projects
 - 1 CO State U Research Assistant-providing data management review of HS data and development of science communication and data management SOPs.
- Reviewed and commented on 10 Resource Briefs developed by URI SeaComm lab
- Reviewed, commented and worked closely with Harper's Ferry staff to develop two 12 minute videos on Hurricane Sandy science projects in the parks.
- NCBN Program Manager, Sara Stevens, acted as the NPS representative on the review panel for proposals submitted to NFWF responding to an RFP which invited proposals from DOI bureaus to conduct monitoring over the next seven years (2017 through 2023) in order to track the ecological metrics of a subset (56) of Hurricane Sandy resilience projects. \$10 million was granted to agencies to collect data that can be used to assess the ecological impact of these projects under the Hurricane Sandy Coastal Resiliency Program. Sara managed the review of over 18 project proposals. Attended all conference calls as NPS

representative for NFWF RFP process and final project selection and kick-off meeting for those selected.

- Managed and tracked 6 Hurricane Sandy accounts in AFS
- NCBN Program Manager, Sara Stevens, continued to work with FIIS interpretive staff to handle science communication needs related to Hurricane Sandy and the FIIS Wilderness Breach. Sara worked with Elizabeth Rogers, Amanda Babson and Minh Phan to promote science in the parks related to I&M and Hurricane Sandy funded projects.
- Represented the NPS on a DOI executive calls related to Hurricane Sandy, and fulfilled requests for NPS Hurricane Sandy budget and information as needed.

Safety

- One biological science technician completed the DOI Motorboat Operator Certification Course held at FIIS, and went through park-required checkout procedures before being cleared to operate park boats.
- The salt marsh field crew reviewed and discussed the salt marsh safety SOPs, and JHAs with the Project Leader (Erika Rocks) prior to conducting any fieldwork during the 2017 season. This included discussions about the hazards of working in the salt marsh, checking in and out each day, driving while on official travel, and ensuring that they had emergency contact numbers saved to their phones. In addition, the use of appropriate PPE when working in areas with dense tick populations was discussed. The field crew maintained contact with park staff regarding any change in logistics (site accessibility, weather, boating conditions, and site hazards) and informed the Project Leader of any changes in sampling schedule. Park staff provided required ATV training.
- Salt Marsh Project Leader forwarded relevant Safety Minutes provided by NER to the field crew.
- Erika Rocks completed CPR/AED (adult and infant) training

III. Public Interest Highlights

Youth and Volunteer Hours Supported by NCBN (Approximately 5,420 hours)

- 1 GIP Intern for 12 weeks- NCBN salt marsh monitoring program Hours: 480
- 2 GIP Interns for 24 weeks each- NCBN Geomorphological monitoring program at GATE, stationed at Sandy Hook. Hours: 1920
- 1 University of Rhode Island Coastal Fellow-140
- 6 University of Rhode Island Students-working on NCBN science communication, FIIS/COLO herpetological inventories, NCBN remote sensing project. Hours: 2,880

Outreach Activities

- GIP Intern, Lauren Zeffer, a Long Island native was featured in an [online interview](#) for GreatLongIsland.com.

- Jim Lynch, NCBN SET monitoring lead, assisted numerous groups with SET and surveying assistance and implementation of the NCBN protocol. Jim held conference calls on SETs and surveying with NPS colleagues in the SECN and staff from the Timucuan Ecological and Historic Preserve in Jacksonville, Florida. Jim also provided surveying assistance to the Smithsonian Ecological Research Center in Edgewater, MD, as well as providing assistance to USGS, PWRC with surveying at the USFWS Blackwater NWR.
- Sara Stevens wrote numerous project “highlight” documents, providing photos, web links, etc. for use by DOI at various Hurricane Sandy events.
- NER Hurricane Sandy google website (developed and maintained by Sara Stevens)--posting of all Hurricane Sandy project proposals, progress reports, resource briefs, photos, etc.
- NER Hurricane Sandy Science Story Map (developed and maintained by Sara Stevens and Thom Curdts)—continued posting of all science communication materials developed for Hurricane Sandy Projects.
<https://www.arcgis.com/apps/MapSeries/index.html?appid=d953beffd6704440bb2464283e7bd740>
- NER Hurricane Sandy Science Flickr Site (developed and maintained by Erika Rocks-NCBN employee) <https://www.flickr.com/photos/npsncbn/albums>

Teaching and Advising Students and Interns

- Sara Stevens was a guest lecturer for the Natural Resources Science Department Senior Colloquium at the University of RI. The colloquium includes ethics in science and developing a professional resume and cover letter, and interviewing techniques.
- Sara Stevens was a guest lecturer for the Natural Resource Science Department at URI to present the I&M program, and future NPS opportunities and employment.
- All NCBN staff mentor both undergraduate and graduate students in the Department of Natural Resources Science at the University of Rhode Island on an ongoing, year-round basis.
- Robin Baranowski, NCBN term Biotech taught Field Botany and Taxonomy for the URI Biological Sciences Dept., a course for seniors and graduate students, summer 2017.
- In February, Robin Baranowski traveled to Tuscon, Arizona to take part in the I&M Science Communication Training at the Desert Research Learning Center just outside Saguaro National Park. The four day training was attended by NPS employees from parks and networks around the country with an interest to further the effectiveness of science

communication between both networks and parks, and between parks and the general public. Training objectives included:

- Effective use of NPS graphic identity
 - Producing effective resource briefs, short documents and newsletters for an intended audience
 - Techniques of video media
 - Effective critique of media
 - Steps for effective communication on websites and social media
 - Building and sustaining a creative science communication community within NPS
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- Erika Rocks has been working with Sarah Gulick (Producer, Harpers Ferry Center) and Kathy Dratch (Fort Collins) to make sure that all project products associated with the Hurricane Sandy videography projects are archived (Interviews, completed videos, existence of raw footage) and will be discoverable into the future. There are terabytes of raw footage (these files are too large and not feasible to upload to DataStore so at this time it will stay at Harper's Ferry Center and archived on hard drives. This footage includes: 40 or so interviews (transcripts, audio recordings) and video logs. Kathy has some students who may be able to start creating records for some files such as interviews.

Publications

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- Psuty, N. P., K. Ames, A. Habeck, E. Haussner, W. J. Schmelz, K. Butler, and J. Greenberg. 2017. Metrics of resilience and recovery in Floyd Bennett Field North, 2014-2016: Jamaica Bay Unit, Gateway National Recreation Area. Natural Resource Report NPS/NCBN/NRR—2017/1506. National Park Service, Fort Collins, Colorado. <https://irma.nps.gov/DataStore/Reference/Profile/2243797>
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- Ullman, D., and A. Babson. 2017. Evaluating VDatum in coastal National Parks: Cape Cod National Seashore. Natural Resource Report NPS/NCBN/NRR—2017/1460. National Park Service, Fort Collins, Colorado. <https://irma.nps.gov/DataStore/Reference/Profile/2240758>

Presentations

- No Substitute for Going to the Field: Correcting Lidar DEMs in Salt Marshes. Katherine Renken, James T. Morris, James Lynch, Holly Bayley, Andrew Neil, Scott Rasmussen, Megan Tyrrell, Michel Tanis. AGU meeting, San Francisco, CA. December 2016

- “Wetland Inundation Analysis Tools” and training on using these tools to process water level data to determine the flooding frequency of the adjacent wetlands. Jim Lynch, invited presenter at NOAA sponsored, two-day workshop at the Smithsonian Environmental Research Center in Edgewater, MD, May 2017.
- “NPS Hurricane Sandy Science Communication Products.” Sara Stevens. Northeast Region Science Communication Network monthly webinar, Sept 2017.

Climate Change Related Monitoring and Additional Projects

- A network of water level monitoring instrumentation was deployed at CACO, FIIS, GATE and ASIS, and maintained by Jim Lynch to enhance the NCBN salt marsh monitoring program and Hurricane Sandy modeling efforts.
- The NCBN Program Manager continued to work with NOAA to assure maintenance and repairs occurred on a critical NOAA tide gauge on Cape Cod that is used to support many park and Network projects. In discussions over many years with NOAA, they have agreed to include the gauge in the NWLON network of permanent tide gauges with yearly maintenance paid for by the NPS. This year the new tide gauge and weather station was installed. Sara took part in many planning calls with NOAA staff to determine the new site for the gauge and equipment needs.

Budget FY17

Account	Description	Authorized	Expended	Balance
PPNENEIM1C/ PPMRSNR1Y.AM0000	Vital Signs	\$800,000	\$798,050	\$1,950
PPNENEIM1C/ PPMRSNR1Y.AM0000	IMD-Collaboration	\$30,000	\$30,000	0.00
PPNENEIM1C/ PPMRSNR1N.NR0000	WRD	\$82,300	\$82,300	0.00
TOTAL		\$912,300		

2017 Expenditures

Personnel

- Total salary costs were \$547,106

Cooperative Agreements (\$181, 085 (Vital Signs Funding)

Cooperative agreement costs were \$22,022 higher than reported in the work plan due to lapsed salary and hiring an intern vs a biotech for the salt marsh monitoring crew.

- \$42,923 Stony Brook University (\$14,634 WRD Funds, \$28,289 VS Funds) Water quality and Seagrass monitoring-FIIS
- \$65,064 Rutgers University, Shoreline Mapping, GATE
- \$69,627 University of Rhode Island, Herp Inventory COLO/GATE
- \$10,750 Conservation Legacy, GIP Intern Program
- \$14,355 Schoodic Institute—Forest Health Monitoring, GEWA, THST, SAHI, COLO

(\$82,300 (WRD Funding)

- \$59,166 (WRD Funds) Virginia Institute of Marine Science (VIMS) Water quality and Seagrass monitoring-ASIS, COLO, GEWA
- \$42,923 Stony Brook University (\$14,634 WRD Funds, \$28,289 VS Funds) Water quality and Seagrass monitoring-FIIS
- \$8,500 NOAA IAA-(WRD Funds) Chatham Tide Gauge equipment

Equipment and Operations (\$80,117)

- \$17,797 Total equipment
- \$60,370 Operations

Travel

- \$21,692 travel costs

Additional funds leveraged by the Network in FY17 (\$172,594)

- The Northeast Region provided an additional \$78,000 in funding support to the Network for the management of multiple Hurricane Sandy funded projects that the Network Program Manager is lead on. This funding was put into a cooperative agreement in FY17 with Colorado State University to fund one research associate to support data management and outreach activities related to these additional projects.
- NER Planning provided funding in the amount of \$69,994 to support final Hurricane Sandy report publication and science communication for Hurricane Sandy final results. A task agreement was extended with the URI SeaComm lab.
- NCBN modified a task agreement with URI GSO for \$24,600 using Hurricane Sandy funds to develop a synthesis report based on the results of the four submerged mapping projects for CACO, FIIS, GATE and ASIS. The report is to provide insight on results and guidance to other parks and programs in the collection of submerged resources habitat mapping data.