Nekton sampling at Sagamore Hill National Historic Site as part of the NPS Inventory and Monitoring Program. National Park Service Biotech, Michelle Blydenburgh works with Jes Cressman from the University of Rhode Island Environmental Data Center.

—Photo Courtesy of John Lee, URI

North Atlantic Coast Cooperative Ecosystem Studies Unit Self-Assessment Report, 2014 through 2018

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Introduction

The North Atlantic Coast Cooperative Ecosystem Studies Unit (NAC-CESU) was established in June 1999 following a competitive process managed by the CESU National Network, with University of Rhode Island (URI) as host university, University of Maryland Eastern Shore as a partner university, and two federal agency participants (National Park Service - NPS, US Geological Survey - USGS). The NAC-CESU cooperative agreement was renewed in June 2004, June 2009, and June 2014 following the successful review of renewal documents submitted by the host university, non-federal partners, and participating federal agencies. It is noted that over the past 20 years the NAC-CESU has grown substantially, now composed of the Narragansett Indian Tribe, twenty-five (25) academic institutions and non-profit research organizations, and nine (9) federal agencies (Table 1). The non-federal partner institutions are spread throughout eight coastal states of the northeastern US from Maine to Virginia.

The CESU National Network Office provided detailed guidance for the required five-year review and renewal of each CESU within the Network. This five-year self-assessment report, responding to specific questions contained within the renewal guidance, reports on the activities and accomplishments of the NAC-CESU during the 2014 through 2018 time frame. This assessment was prepared by the host university and represents a compilation and synthesis of information provided by the federal agencies and the numerous investigators that received support during the assessment period. The guidance calls for brief responses; readers seeking more information are encouraged to visit the detailed appendices and NAC-CESU website (http://www.naccesu.org/).

Salt Marsh habitat of Colonial National Historical Park, Virginia. *—Robin Baranowski, NPS*

This report is completed with deep appreciation for the cooperation of our federal and non-federal partners, and the many Principal Investigators who completed an exceptional array of projects. Sincere acknowlegement is also extended to the National Park Service personnel duty-stationed at the University of Rhode Island. And heartfelt gratitude is owed to the Coastal Institute team for their assistance in collecting, organizing, crafting, and editing the overall report. I couldn't do it without you.

—Judith Swift

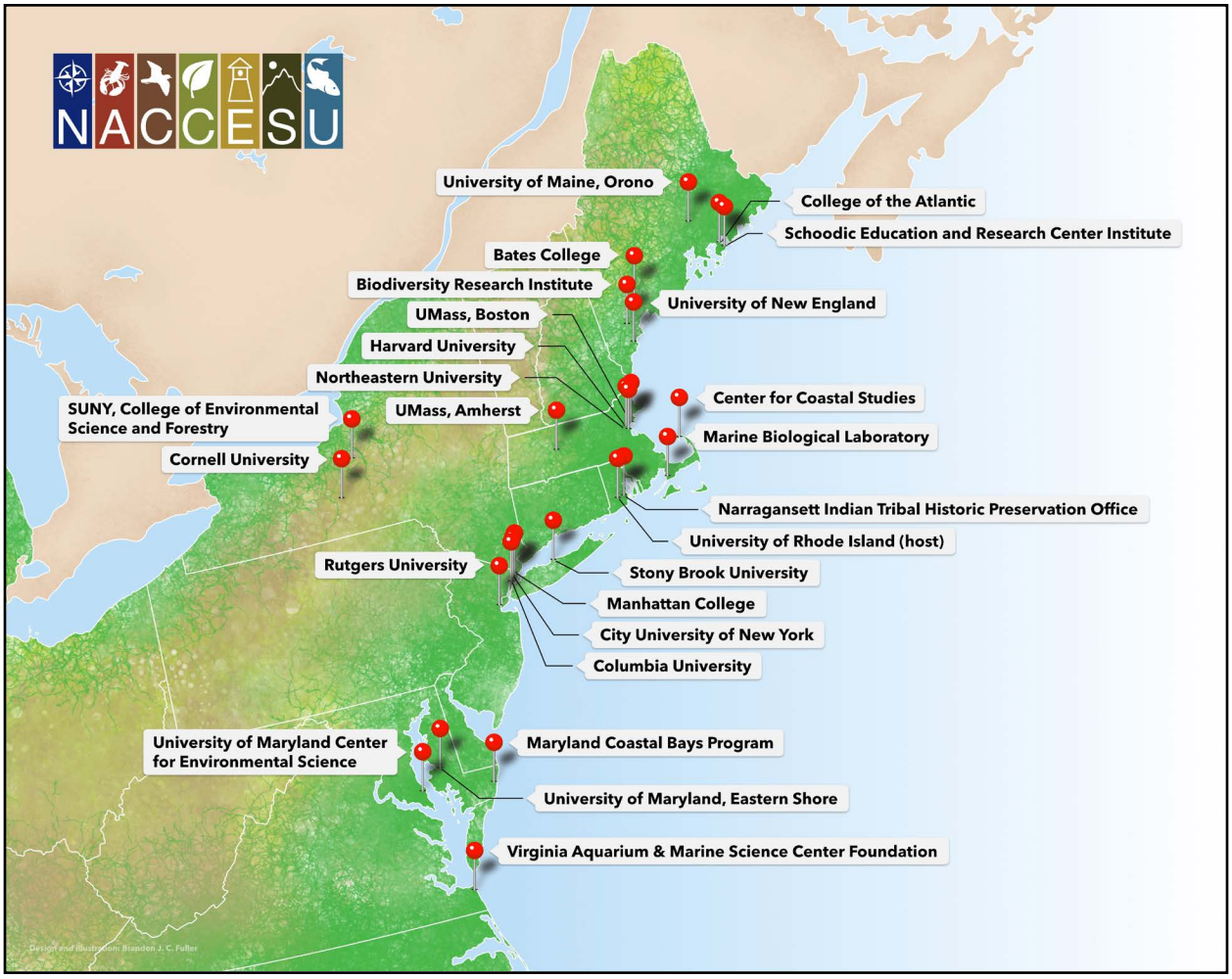


Table 1. NAC-CESU partners. Bold type indicates partners that have joined during the 2014-2018 assessment period.

CESU Partner	Year joined
Non-Federal Partners[1]	
University of Rhode Island (host university)	1999
University of Maryland Eastern Shore	1999
Rutgers University	2001
University of Massachusetts at Amherst	2002
Maryland Coastal Bays Program	2003
Stony Brook University	2003
University of Maine	2005
City University of New York (CUNY)	2006
College of the Atlantic	2007

SUNY-School of Environmental Science and Forestry (SUNY-ESF)	2008
Columbia University	2009
Bates College	2010
University of Massachusetts at Boston	2010
Cornell University	2011
Provincetown Center for Coastal Studies	2011
Biodiversity Research Institute	2012
Northeastern University	2012
Harvard University	2013
Manhattan College	2013
Marine Biological Laboratory	2013
Schoodic Education and Research Center	2013
University of New England	2013
University of Connecticut	**2014**
University of Maryland Center for Environmental Science	**2014**
Virginia Aquarium and Marine Science Center Foundation, Inc.	**2015**

University of Rhode Island Natural Resources Science undergraduate student, Elizabeth Shadle, handling an adult snapping turtle (Chelydra serpentine) *as part of a herpetological inventory conducted by University of Rhode Island scientists at Colonial National Historical Park.*

—John Lee, URI

Tribal Partner	
Narragansett Indian Tribal Historic Preservation Office	2013
Federal Partners	
National Park Service (NPS)	1999
U.S. Geological Survey (USGS)	1999
Natural Resources Conservation Service (NRCS)	2004
US Army Corps of Engineers	2008
US Fish and Wildlife Service (USFWS)	2009
National Oceanic and Atmospheric Administration (NOAA)	2010
Bureau of Ocean Energy Management (BOEM)	2011
US Department of Defense (DOD)	2013
Bureau of Indian Affairs (BIA)	**2016**

[1] Three institutions are in the process of becoming new partners: New Jersey Audubon, Natural Areas Association, and Bryn Mawr College.

Rutgers University student collecting shoreline monitoring data at Gateway National Recreation Area as part of the National Park Service Inventory and Monitoring Program.

—Andrea Spahn, Rutgers University

<u>Category A</u>: Federal Responsibilities

Did each federal agency in the CESU…

1) *Provide opportunities for coordinated, collaborative scientific and scholarly activities (i.e., research, technical assistance, and education) that inform stewardship of, and education about, public trust heritage resources in alignment with CESU, agency, and partner mission goals, programmatic objectives, and authorities? Provide details, including reference to agency-support (or lack thereof) and activities over the current five-year term (e.g., number of projects; types of projects; management issues, topics, or subject matter areas).*

Funding in support of agency-sponsored cooperative research, technical assistance and education was provided by three of the NAC-CESU federal agency partners (Department of Defense, National Park Service, US Army Corps of Engineers), with number of awards and funding amount provided in Table 2. The range of topics addressed by the project investigators (see Appendix 1 for a listing of projects organized by agency and non-federal partner) reflects the extraordinary diversity of disciplines that are represented by the NAC-CESU academic and research institutions. All aspects of coastal science (e.g., ecology, geomorphology, water quality, modeling), wildlife biology, rare species management, habitat restoration, ecosystem response to climate change, and other research and management topics have been addressed over the five-year period. Investigations related to cultural landscapes, ethnographic assessments, and archaeological and historic site evaluations are also fundamental to the NAC-CESU activities, along with outreach, science communication, student education, and technical assistance.

A Black-bellied Plover (Pluvialis squatarola) *loafing on the beach at Cape Cod National Seashore.*
—Bill Thompson, NPS

Table 2.

NAC CESU project awards by each federal agency during federal FY2014 through FY2018.

Federal Agency	Number of Awards	Total $
Bureau of Indian Affairs		
Bureau of Ocean Energy Management		
Department of Defense	6	$313,915
National Oceanic and Atmospheric Administration		
National Park Service	105	$14,971,533
Natural Resources Conservation Service		
US Army Corps of Engineers – Civil Works	3	$207,286
US Fish and Wildlife Service		
US Geological Survey		
Total	**114**	**$15,492,734**

2) *Provide funds for basic support and salary for the CESU host university (or other nonfederal partner institution) faculty/personnel, as appropriate? How have federal partners provided support to the host university over the current five-year term (both financial and in-kind) specifically to support CESU operations? Provide details regarding support (e.g., support by agency, fiscal year, instrument/mechanism) and associated expenditures.*

The Department of Defense provided $10,000 (2013) to the host URI in accordance with their inclusion as a new NAC-CESU member. During the 2014-2018 assessment period these funds supported NAC-CESU operations (e.g., travel to CESU events, personnel related to web development and maintenance, database management, etc.), as detailed in Appendix 2. Further, in accordance with a new policy, the CESU National Network Office annually provides funds accrued from federal agencies to each CESU host institution to support program operations. The NAC-CESU received funds in 2017 ($16,000) and 2018 ($9,000) with budget details provided in Appendix 2.

The resident federal scientists at URI, particularly those with the NPS, provide in-kind operational assistance related to website content, project database management, meeting planning, correspondence with partners, and other operations tasks. As noted in the response to question A.5 the NPS and USGS scientists duty-stationed at URI also provide considerable in-kind support through teaching university courses, mentoring students, and other collaborations at no cost to the university.

3) *Make available federal personnel to serve on the CESU Federal Managers Committee? Did all federal technical representatives actively participate in CESU Federal Managers Committee activities, CESU partner meetings, and other CESU activities (e.g., communication, planning, reporting)? Provide details, including reference to consistent agency participation (or lack thereof) over the current five-year term (identified by agency, as appropriate).*

The NPS, Army Corps of Engineers, and Department of Defense have been strong partners since their involvement in the NAC-CESU, as reflected in project funding (see Table 2 for 2014-2018 support) and announcement of funding opportunities, as well as timely communication with the host university. The Natural Resources Conservation Service (NRCS) has also been an active partner, although no new projects were supported during the current assessment period. USGS, with their NAC-CESU technical representative duty-stationed at the host URI, maintains a close relationship through mentoring of URI students, teaching, and collaboration with NPS scientists and managers.

The host university will seek ways to involve the other NAC-CESU federal partners. Perhaps the successful student internship program initiated by the NPS could serve as a model for the other agencies to adopt (see response to questions 1 and 4 of Category C) and be a catalyst for engagement.

4) *Comply with CESU Network, host university, and nonfederal partner institution rules, regulations, and policies (e.g., professional conduct; health and safety; use of services and facilities; use of animals, recombinant DNA, infectious agents or radioactive substances) and ensure its employees follow the Code of Ethics for U.S. Government Employees? Provide details, including examples of best practices or areas of concern (identified by agency, as appropriate).*

There are no concerns to report. NPS and USGS scientists duty-stationed at URI frequently use university facilities (e.g., labs, libraries, meeting rooms) and are diligent in adhering to university rules, regulations and policies.

University of Rhode Island Environmental Data Center staff, along with NPS staff receiving training in the use of survey grade GPS equipment, participants learned how to use the software necessary to process and interpret the data.
—Erika Nicosia, NPS

5) *Did federal agency employees actively participate in the activities of the host university and nonfederal partner institutions, including serving on graduate student committees or teaching courses? Provide details, including examples of courses or other service activities.*

In association with the NAC-CESU cooperative agreement there are seven full-time federal scientists and one part-time that are resident at the host university and fully engaged in the research and intellectual atmosphere of their respective academic departments. Federal scientists, their agency programs, and university departmental affiliations are as follows;

– NPS CESU Research Coordinator and Senior Scientist, Dr. William Thompson (Department of Natural Resources Science); former NPS Coordinator/Senior Scientist, Dr. Charles Roman, retired Feb 2016 (Graduate School of Oceanography)

– NPS Climate Change Response Program Coordinator, Dr. Amanda Babson (Graduate School of Oceanography)

– NPS Northeast Coastal and Barrier Network Coordinator, Sara Stevens (Dept. of Natural Resources Science)

– NPS Northeast Coastal and Barrier Network Staff (3 staff scientists, Dennis Skidds, Robin Baranowski, Holly Plaisted (Dept. of Natural Resources Science)

– NPS GIS Field Technical Support Center Coordinator, Nigel Shaw (part-time, Dept. of Natural Resources Science)

– USGS Senior Scientist and NAC-CESU technical representative, Patuxent Wildlife Research Center, Dr. Howard Ginsberg (Dept of Plant Sciences and Entomology)

Dr. Ginsberg, the USGS senior scientist, serves as a Professor-in-Residence, as did Dr. Roman. Dr. Thompson is an Adjunct Professor, while the other resident scientists don't have faculty status but are integral to their respective academic departments. Although Drs. Thompson, Ginsberg and Roman were specifically assigned to be involved in the operation of the NAC-CESU, the other NPS scientists and managers listed in this section were all engaged in CESU activities through research collaboration with non-federal partners, teaching and student mentoring at the host university, and administration of NAC-CESU projects.

Examples of federal scientists' contributions to the host URI in areas of teaching, student mentoring, and research collaboration follow (2014 through 2018);

<u>TEACHING (as lead or co-lead Professor)</u>

– NRS 592, Designing a Biological Monitoring Program, Thompson (2018)

– NRS 555, Applied Coastal Ecology, Roman (2014, 2016)

– ENT 544, Insect Ecology, Ginsberg (2014)

– ENT 388, Bee Biology, Ginsberg (2017, 2018)

– NRS 524, Advanced Spatial Planning, Shaw and Skidds (2014, 2016, 2018)

TEACHING (guest lectures)

– EVS 505, Environmental Leadership, Thompson (2017)

– Honors Course, "Emerging Infectious Diseases," Ginsberg (2014, 2015, 2016)

– MAF 61, Marine Affairs Seminar, Babson (2014, 2017)

– NRS 200, Seminar in Natural Resources, Skidds (2015)

Graduate student writers from the University of Rhode Island, SEAComm lab along with professors, Dr. Caroline Gottschalk Druschke, presenting their compilation of science communication work at the Fire Island Biennial Science Conference.

—URI SEAComm Lab

STUDENT MENTORSHIP

– serve as Major Professor for 1 Master's student; Ginsberg

– serve on 12 PhD and Master's student committees; Babson, Ginsberg, Roman

– serve as Thesis Defense Chair, 3 students; Ginsberg

– undergraduate student mentorship (15 students), including 3 students involved in the NSF-supported Summer Undergraduate Research Fellowship Program hosted by URI's Graduate School of Oceanography; Babson, Ginsberg

RESEARCH COLLABORATION (federal employees serve as co-author with university students and colleagues on professional publications, peer-reviewed technical reports, or professional presentations; SEE Appendix 3 for details)

– 21 publications

– 8 technical reports

– 55 presentations

Graduate students from Stony Brook University under the guidance of Dr. Christopher Gobler, collect water samples in Great South Bay, as part of a study to monitoring changes the bay due to the breach of Fire Island National Seashore that occurred during Hurricane Sandy.

—Erin Finicane, NPS

URI students have also benefitted from class field trips to National Park units (Gateway National Recreation Area, Fire Island and Cape Cod National Seashores), led by NPS scientists' resident (Shaw and Skidds) at URI (NRS 524; 2014, 2016, 2018). Further, NPS and USFWS scientists' duty-stationed at park or refuge units have lectured before URI graduate-level classes (NRS 555; 2014, 2016). Please visit the 2017 report "*Partnership for the Environment: National Park Service contributions to the University of Rhode Island*"(https://ci.uri.edu/files/NPS_2017_report_d3_sm.pdf) highlighting collaborations of the federal personnel and various NPS programs that are resident at URI and under the NAC-CESU cooperative umbrella.

Other activities during the assessment period include service on graduate student thesis/dissertation committees from CESU institutions other than the host URI (i.e., Stony Brook University, East Carolina University; Roman), and guest lectures/presentations (Stony Brook University, Univ of Virginia, NC State University, UMass-Boston; Babson).

6) *Take responsibility for their respective agency's role in administering the CESU agreement, transferring funds, and supervision of agency employees? Provide details, including examples of best practices or areas of concern (identified by agency, as appropriate).*

The three federal agencies that transferred funds to NAC-CESU partners during the assessment period (see Table 2) appeared to efficiently implement all administrative aspects including, announcing the availability of funds, selecting project investigators, requesting and reviewing proposals, awarding funds, paying invoices, and overseeing project progress and completion.

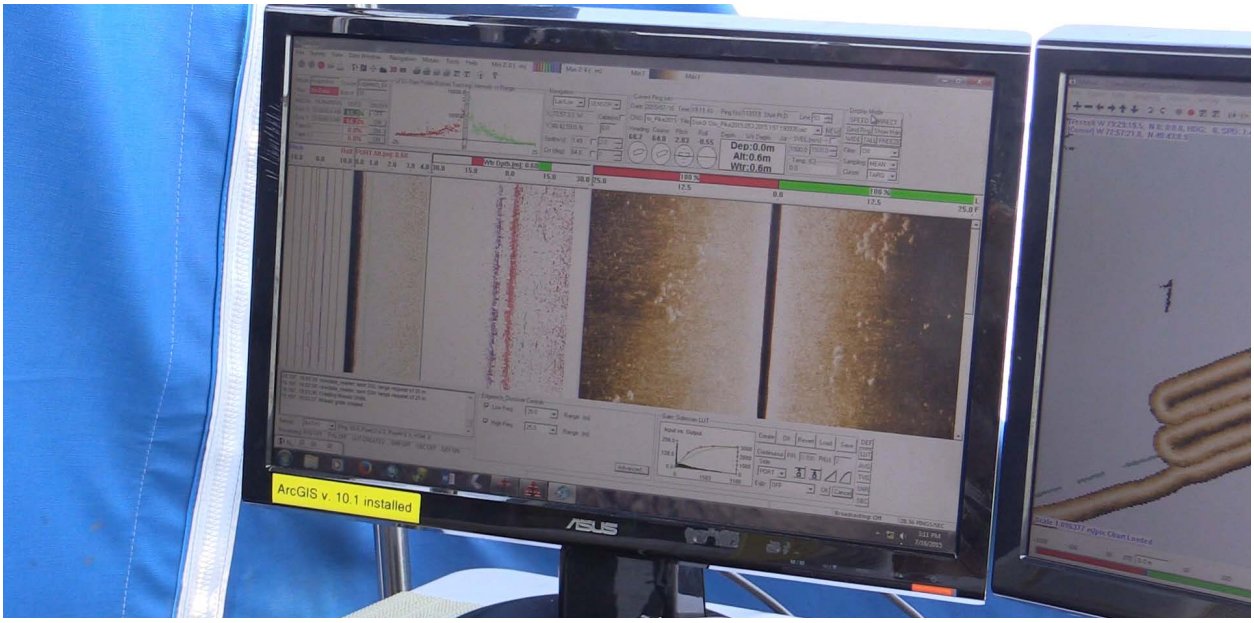
As previously noted, there are 8 federal scientists that are affiliated in some capacity with the NAC-CESU and resident at the host URI. NPS and USGS supervisory offices (NPS Northeast Region and USGS Patuxent Wildlife Research Center) have supported the interaction of these scientists with university faculty, staff, and students (see response to item #5 above).

7) *Provide administrative assistance, as appropriate, necessary to execute the CESU agreement and subsequent amendments or modifications (e.g., timely processing, signatures)? Provide details, including reference to consistent and/or effective assistance (or lack thereof) over the current five-year term (identified by agency, as appropriate).*

Early in the life of the CESU program the process of preparing and executing a new cooperative agreement and adding new federal and non-federal partners, by amendment to the cooperative agreement, was manageable and completed in a timely manner. The CESU National Network Office prepared the cooperative agreements and amendments and obtained the appropriate federal agency signatures, while the host institution would gather the non-federal partner signatures. However, as the NAC-CESU has grown over the past two decades, and moreover, as the CESU National Network has expanded to 15 federal partners and an amazing 435 non-federal partners, it appears that the process of adding new partners by amendment (preparing the amendment and securing appropriate signatures) is now challenging. As noted, preparing the amendment document and obtaining signatures is the responsibility of the CESU National Network, an office that has apparently had the same level of staff and administrative support since inception of a very modest program that was established twenty years ago. Measures have been adopted to streamline the signature process, but the magnitude of the workload across the entire CESU Network is daunting.

8) **Federal Agency Response Only:** *What percentage of projects were conducted successfully (e.g., project tasks completed, products/outputs accepted by the sponsoring agency)? What percentage of projects were unsuccessful (e.g., project tasks incomplete, products/outputs not accepted by the sponsoring agency)? Provide details (e.g., what factors influenced/contributed to project success or failure)?*

Prior to preparation of this five-year assessment report all participating federal agencies were contacted and asked this question. There were no replies regarding unsuccessful project outcomes. Appendix 3, a listing of productivity related to NAC-CESU projects (e.g., publications, presentations, outreach), clearly demonstrates success at transferring technical knowledge to the federal agencies and beyond.



University of Rhode Island Graduate School of Oceanography, Dr. John King lab, collecting submerged mapping data at Fire Island National Seashore.

—Sarah Gulick, NPS

<u>Category B</u>: Host University Responsibilities

Did the host university…

1) *Allow and encourage its faculty to engage in participating federal agency sponsored research, technical assistance and education activities related to the CESU objectives? Provide details, including description of faculty engagement and two highlighted/example projects.*

The University of Rhode Island administration (Provost's Office, Deans, Department Chairs, Coastal Institute Director) and faculty have been supportive of this very productive 20-year cooperative relationship. The research accomplishments as exemplified by publications, opportunities for student funding and experiential learning, the federal commitment to teaching and mentoring, and university service addressing our nation's coastal zone management issues have proven the mutual value of university-agency partnerships such as the CESU. Several URI colleges, academic departments, centers, and institutes have been involved in NAC-CESU projects and activities over the assessment period reflecting the breadth of disciplines that are addressed by the host university (Department of Natural Resources Science, Department of Marine Affairs, Department of History, Graduate School of Oceanography, and Coastal Institute). See Appendices 1 and 3 for details on project disciplines and accomplishments.

During the 2014 through 2018 assessment period, an extraordinary example of URI faculty, staff and student engagement is related to studying the response and resilience of coastal National Park units that were in the wake of Hurricane Sandy. Investigators from the URI Department of Natural Resources Science and Graduate School of Oceanography led the following Hurricane Sandy studies.

University of Rhode Island Environmental Data Center staff, along with NPS staff receiving training in the use of survey grade GPS equipment used for monitoring and collecting elevation data at NPS sites.

—Erika Nicosia, NPS

– Mapping of submerged marine habitats at Fire Island National Seashore and coordinating efforts at three other National Parks following the storm (URI and the partner universities were awarded for this effort at the 2016 National CESU Network Biennial Meeting and again with the 2018 CESU Network National Award).

– Using state-of-the-art satellite remote sensing, salt marsh habitat changes were documented

– A network of estuarine water-level recorders was established and high-resolution topographic elevations obtained at coastal parks to enable more informative storm-response monitoring for the next big event.

– A storm response data acquisition protocol was developed so field personnel will have all relevant data sets available on mobile devices – again in preparation for future storm response.

– Science communication tools were provided for park managers to effectively tell the story of natural ecosystem resilience and adaptation to storm events.

The NAC-CESU program, with a cooperative agreement and capability to quickly seek highly qualified investigators and obligate funds, was crucial to the success of the Hurricane Sandy storm response effort with expertise provided by URI and other partners (e.g., Stony Brook University, Rutgers University, CUNY, SUNY-ESF, University of Delaware, Provincetown Center for Coastal Studies, and Wildlife Conservation Society). See Appendices 1 and 3 for listing of Sandy-related projects and publications/presentations derived (to date) from the research efforts.

Aerial photo taken from the airplane of Dr. Charles Flagg from Stony Brook University who documented the changes in the Fire Island National Seashore Wilderness Breach that occurred during Hurricane Sandy.

—Sarah Gulick, NPS

2) *Provide basic administrative and clerical support over the current five-year term (i.e., in support of CESU operations)? Provide details (e.g., nature and level of support).*

a. *How much did it cost the host institution to support the CESU over the current five-year term? Provide details (e.g., CESU-specific costs, Director and/or staff time, % FTE, travel, facilities, administrative services, equipment, supplies, communications, printing, web hosting).*

In-kind support provided by the URI Coastal Institute, the home of the NAC-CESU Director, has averaged about $45,000 per year during the assessment period. Details of specific support items are provided in Appendix 2. In addition, the university provides office space for the NPS Climate Adaptation Coordinator and the USGS senior scientist at no cost. The Department of Natural Resources Science, academic affiliation of the NPS CESU Research Coordinator and 6 other NPS scientists, charges a modest fee for office space. Facilities for meetings, workshops, conferences and symposia are provided at no cost.

b. *Where is the CESU Director's office officially stationed within the host institution (e.g., Office of the President, School of Natural Resources, Department of Forest Resources)? Provide details (e.g., location relative to other departments, schools, greater organization), as appropriate.*

The NAC-CESU is within the URI Coastal Institute. The Director of the Coastal Institute serves as Director of the NAC-CESU and reports to the Office of the Provost and Vice President for Academic Affairs. The Coastal Institute is the ideal home for the NAC-CESU as it integrates across all of the University's major academic colleges, departments and programs that are relevant to NAC-CESU research, technical assistance and education endeavors. The Coastal Institute Director corresponds frequently with Deans and faculty associated with the College of Environment and Life Sciences, College of Arts and Sciences, College of Pharmacy, College of Engineering, and Graduate School of Oceanography.

3) *Provide access for CESU federal agency personnel (e.g., CESU Research Coordinator) to campus facilities, including library, laboratories, and computer facilities? Provide details and examples.*

All NPS and USGS scientists that are resident at URI have complete access to the university library system (including on-line search capabilities), computer facilities (e.g., internet, large-format printers, data storage, IT services) and other routine privileges in accordance with the same policies that are followed by university faculty and staff. NPS and USGS resident scientists do not have laboratories dedicated exclusively to their research needs; however, all research projects are conducted collaboratively with university faculty and laboratory needs are shared with the collaborating faculty.

Graduate student from Stony Brook University under the guidance of Dr. Christopher Gobler, collecting water samples in Great South Bay —Sarah Gulick, NPS

4) *Provide suitable office space, furniture and laboratory space, utilities, computer network access and basic telephone service for CESU federal agency personnel (e.g., CESU Research Coordinator) to be located at the Host University? Provide details (e.g., challenges, successful approaches, examples).*

All senior level NPS and USGS personnel resident at URI (e.g., CESU Research Coordinator, NPS Climate Adaptation Coordinator, NPS Coastal and Barrier Network Coordinator, USGS Senior Scientist) have offices and support services (e.g., furniture, telephone, internet) as are provided to University faculty and senior staff. The University provides shared offices for the NPS science support staff (e.g., data manager, aquatic ecologist, biologist/botanist).

Temporary office space is also available for federal employees and/or colleagues that visit the NAC-CESU for several days, or longer. As examples, during 2014-2015 a scientist from Acadia National Park was assigned temporary office space at URI as he was collaborating on a project with the NAC-CESU Research Coordinator. Similarly, the hydrologist at Cape Cod National Seashore was working toward a Master's degree at URI (2015-2018) and maintained office space as she attended classes and interacted with faculty and students.

5) *Offer educational and training opportunities to participating federal agency employees, as appropriate? Provide details (e.g., number of trainings, number of people, course dates, course descriptions).*

CESU federal agency employees have participated in numerous education and training opportunities offered by URI during the assessment period. Examples follow.

– Workshops: Methods for shallow water submerged habitat mapping (lead, URI-GSO)

Dates: March 2014 and March 2016

Federal participants from Cape Cod, Fire Island and Assateague Island National Seashores and Gateway National Recreation Area, NPS Northeast Region Office, NPS Water Resources Division-Ft. Collins, NOAA Coastal Services Center

– Field technician training on RTK-GPS elevation mapping (lead, URI-EDC)

Dates: Sept 2014 at Assateague Island National Seashore
May 2015 at Fire Island National Seashore
June 2015 at Cape Cod National Seashore

Stony Brook University graduate student collecting nekton data along Fire Island National Seashore as part of a study to understand the effects of the Fire Island Wilderness Breach on fish species composition and abundance in Great South Bay.
—Dr. Bradley Peterson, Stony Brook University

– Trimble robotic total station training (lead, URI-EDC)

Date: October 2014

Training conducted at URI, with 14 NPS participants from coastal National Parks

– WEBINARS for northeastern US coastal National Parks (lead, URI-EDC)

- Feb 2015 and March 2016, Emergency Response Geodatabases
- March 2015 and Sept 2015, Hurricane Sandy Geodatabases and Web Applications
- June 2017, Hurricane Sandy elevation mapping and modeling (NPS-wide Webinar)

– SSEER Workshop (Scientific Support for Environmental Emergency Response)

- July 2016 (lead URI-Coastal Institute)
- NPS participants and presentation on "NPS lessons learned from Hurricane Sandy"

– URI Master's in Environmental Science and Management (MESM)

Date: 2015 through 2018

The hydrologist from Cape Cod National Seashore (Kelly Medeiros) recently completed her Master's degree, while continuing to work full-time at the Seashore. The URI MESM program is designed for working professionals with a desire to enhance their skills and educational credentials (https://web.uri.edu/cels-gradprograms/mesm/). This non-thesis Master's program is an excellent career-building model for other federal employees that are affiliated with the NAC-CESU program to consider. Other NAC-CESU universities have similar non-thesis Master's programs, such as Stony Brook University, School of Marine and Atmospheric Sciences — a program that federal employees at Fire Island National Seashore have benefitted from (https://www.somas.stonybrook.edu/mcp/about/).

University of Rhode Island Natural Resources Science undergraduate student, Lauren Zeffer collecting data at Fire Island National Seashore for the NPS Inventory and Monitoring Program.

—Daniel Cole, NPS

6) *Coordinate activities, as appropriate, with the CESU federal, tribal, and nonfederal partners and develop administrative policies for such coordination? Provide details.*

a. *Was a CESU Managers Committee maintained and convened, at least annually? Please provide details (e.g., meeting dates, meeting agendas, number/affiliation of participants, meeting minutes).*

During the 5-year assessment period no formal NAC-CESU Managers Committee meetings were convened. It is noted that a Managers Committee meeting was planned and scheduled for Fall 2015, to be held at the Rutgers University Marine Field Station, but cancelled due to lack of a meaningful quorum of partners. During the previous 5-yr terms of the NAC-CESU, the host university was diligent in planning and convening Managers Meetings (held at different locations and including invited guests and field trips; or a WebEx meeting), with modest interest and attendance. Partner interest during the 2014-2018 assessment period has waned; except for the consistent and enthusiastic involvement of several non-federal (e.g., host URI, CUNY, College of the Atlantic, Provincetown Center for Coastal Studies, Rutgers, Stony Brook, SUNY-ESF, and others) and federal partners (e.g., Army Corps, DoD, NPS, NRCS, USGS). Over 40% of the federal and 25% of non-federal partners have had limited or no involvement in the NAC-CESU since joining the program. Ways to enhance partner involvement are discussed in the response to question 2, Category C.

Despite no formal Managers Committee meetings during the 2014-2018 assessment period, there was active communication among partners via email correspondence, science-focused meetings (as noted in 6b below), and participation by the host university, federal partners, and some NAC-CESU non-federal partners at the Biennial CESU National Meetings (June 2014, June 2016, June 2018). It should also be noted, as presented in the response to question 6b, many of the NAC-CESU federal and non-federal partners were fully committed with Hurricane Sandy research activities, planning meetings, and professional presentations during the 2014-2018 assessment period. The host university was hesitant to schedule additional meetings; thus, necessary information sharing between the host university and partners was conducted through email correspondence. In the future the host university will revive a schedule of periodic Managers Committee meetings. In fact, a Managers Committee meeting was scheduled for January 15, 2019 (with an overview of this five-year assessment report as one of several agenda items), but the meeting was postponed due to the federal government shutdown.

A Diamondback Terrapin (Malaclemys terrapin) *busy digging her nest along a salt marsh creek at Assateague Island National Park.*
—Robin Baranowski, NPS

b. *Were periodic meetings of the CESU partners convened, at least annually, for the purpose of collaboration and coordination of CESU activities? Provide details (e.g., meeting dates, meeting agendas, level of participation, affiliation of participants, meeting minutes).*

The following are examples of meetings, related to Hurricane Sandy response and other topics, that were held to coordinate or communicate specific science, management, education, and/or outreach activities, with participation by multiple NAC-CESU federal and non-federal partners.

– Submerged Habitat Mapping: Develop Uniform Methods for Cape Cod, Fire Island, Gateway, Assateague.
Date: March 2014 (methods meeting)
March 2016 (progress meeting)
Location: Rutgers University
NAC-CESU Participants: URI (both sessions planned and organized by URI), Rutgers, Univ Delaware, Provincetown Center for Coastal Studies, NPS-Northeast Region, Cape Cod/Fire Island/Assateague National Seashores, Gateway National Recreation Area, NOAA-Coastal Services Center.

– Research Agenda and Progress for Hurricane Sandy Response Studies
Date: January 2014
Location: Stony Brook University
NAC-CESU Participants: URI, Stony Brook Univ, Rutgers Univ., CUNY, NPS, USGS, NOAA-NY State Sea Grant, USFWS

– George Wright Society Biennial Conference, "Special Session: Hurricane Sandy Coastal Resilience" (several special sessions on this topic)
Date: March 29 – April 3, 2015
Location: Oakland, CA
NAC-CESU Speakers: URI, Stony Brook University, Rutgers University, CUNY, USGS, NPS (Northeast Region Office, Assateague Island NS, Fire Island NS, Cape Cod NS, Gateway NRA)

– Coastal and Estuarine Research Federation Conference, "Special Session: Coastal Resilience Post-Hurricane Sandy"
Date: Nov 5-7, 2017
Location: Providence, RI
NAC-CESU Speakers: Rutgers University, Stony Brook University, University of Connecticut, University of South Carolina (Piedmont South Atlantic Coast CESU), NPS, USFWS, USGS

It is also noted that from 2012 through 2016 the NPS was represented by the NAC-CESU Research Coordinator/Senior Scientist and Northeast Region Chief Scientist on the "Hurricane Sandy Department of the Interior Regional Executives Team," with weekly-to-biweekly meetings to discuss progress with research and management projects being conducted by the various Interior agencies (NPS, USFWS, BOEM, USGS) and their cooperators (NAC-CESU non-federal partners). The purpose of these frequent discussions was to enhance coordination, collaboration, and information sharing. Similarly, the NPS Research Coordinator co-chaired the "NPS Northeast Region Hurricane Sandy Science Response Team" (2012-2016), another frequent opportunity for coordi-

nation and collaboration with research partners (URI, Stony Brook University, Rutgers University, CUNY, SUNY-ESF, Provincetown Center for Coastal Studies, USGS).

Beyond Hurricane Sandy, NAC-CESU federal and non-federal partners were engaged annually in the "Science in the Seashore Symposia," conducted at Cape Cod National Seashore (Aug 2014, 2015, 2016, Sept 2017) with presentations and attendance by the following partners; URI, Provincetown Center for Coastal Studies, UMass-Amherst, The Ecosystems Center-Marine Biological Lab, Bates College, NPS, USGS-Patuxent Wildlife Research Center, USGS-Coastal and Marine Geology Program. Similarly, Fire Island NS convened their biennial science conferences (March 2014, April 2016, April 2018), with extensive NAC-CESU partner participation (URI, Stony Brook University, Rutgers University, SUNY-ESF, Cornell University, NPS, USGS, USFWS).

An American Bittern (Botaurus lentiginosus) foraging in the salt marsh at Parker River National Wildlife Refuge.
—Bill Thompson, NPS

c. *What efforts were made to communicate each tribal and nonfederal partner institution's strengths and expertise to the federal partners (e.g., listing investigators on the CESU web site, expertise database, meetings)? Provide details (e.g., challenges, successful approaches).*

When the NAC-CESU had fewer non-federal partners, a database of experts and links to departmental websites were maintained by URI and posted to the NAC-CESU website. However, with a rapidly growing number of nonfederal partners (currently 26) and frequent changes in partner personnel, the expert database became outdated and difficult to maintain. The NAC-CESU website (currently under major revision) will contain links to each partner's website, with a few bullets that highlight some general areas of expertise for each partner. Viewing departmental and faculty profiles and utilizing internet search engines seems to be the most efficient way for federal partners to seek expertise. Also, the NAC-CESU website lists a "technical representative" for each non-federal partner, with contact information. Each representative has been advised that, upon request, one of their responsibilities is to provide the names of appropriate investigators for specific agency project needs.

d. *How were federal funding announcements and/or other opportunities communicated to partners across the CESU? Provide details (e.g., challenges, successful approaches).*

Agency funding announcements, often called "Request for Statements of Interest and Qualifications" or something similar, are sent by the federal agencies to the NAC-CESU Director. The Director then promptly emails the funding announcement to the technical representative from each non-federal partner for distribution to their respective institution. Each representative has been and is frequently advised that this is among the most important of their responsibilities. The funding announcements are also prominently posted on the NAC-CESU website.

Ghost Crab — Robin Baranowski, NPS Photo

<u>Category C</u>: Participation of all Partners

1) *What efforts did the host university, tribal, nonfederal, and federal partners undertake to engage students in projects and other activities of the CESU? Provide details (e.g., challenges, best practices, statistics for graduate and undergraduate student involvement, example projects).*

Student education is a primary cornerstone of the CESU Network and we are pleased to recognize that student engagement in NAC-CESU projects has been extraordinary over the 2014 through 2018 assessment period. Through collaboration with university faculty, agency scientists, and agency project managers the students have acquired hands-on experiences that will support their career ambitions. Some highlights of student involvement in NAC-CESU projects are listed here.

<u>Student Theses/Dissertations, Student-authored Publications and Presentations</u>

- 20 Master's students have earned or are working toward their degree, resulting in a thesis supported by a NAC-CESU project
- 7 PhD students have earned or are working toward their degree, resulting in a dissertation supported by a NAC-CESU project
- Students were senior authors on 19 professional manuscripts published in peer reviewed journals and 2 peer-reviewed technical reports
- Graduate students were the primary authors on 79 presentations given at scientific conferences

See Appendix 3 for details.

Student Internships and Courses

- NPS student internships in partnership with UMass-Boston (collaborating with Boston Harbor Islands National Recreation Area, CUNY (with NYC national park units), and University of Maryland Eastern Shore (with Assateague Island National Seashore). Students are financially supported, engaged in resource stewardship projects, and mentored by university faculty and NPS staff.
- These programs followed a successful model that was tested during the 2009-2013 assessment period with College of the Atlantic and Acadia National Park.
- Summer graduate/undergraduate field course on "Cultural Landscape Preservation at Acadia National Park," offered by SUNY-ESF Center for Cultural Landscape Preservation. Summer 2015.

Vegetation data collection — Erika Nicosia, NPS Photo

2) *Did all partners actively participate in CESU activities (e.g., meetings, phone calls, signing amendments, strategic planning, reporting)? Provide details (e.g., if not, why not? Participation statistics, challenges to participation, successful approaches, best practices).*

Partners have been responsive, for the most part, to routine NAC-CESU communications (e.g., request for amendment signatures) and the non-partner principal investigators were especially helpful in providing their many publications, presentations and student engagement products that are presented in Appendix 3. Regarding more active participation and interest, there is a strong core of federal and non-federal partners that have consistently promoted the NAC-CESU vision (e.g., student education, outreach through professional and public outlets, cooperative research and technical assistance). However, and as stated previously (see response to question 6a Category B), 6 of the 25 non-federal partners and 4 of the 9 federal partners have had little or no involvement in the NAC-CESU. The host university has some thoughts on how to fully engage the partners.

- Complete Upgrade of the NAC-CESU website: Existing and new partners need to be aware of the cutting-edge and highly relevant work being done by the partners, in collaboration with federal agencies. We want all our partners to appreciate the benefits of being an active participant in this partnership. The website will highlight the value of this research toward addressing issues important to the funding agency, but also emphasize that engagement in NAC-CESU projects enhances the research capabilities, student opportunities, and recognition of the non-federal partners. The revised website will centralize study findings and coupled with social media the efforts of our scientists and cooperating federal managers will reach broad audiences. Fortunately, the additional funding from federal partners makes a sweeping website overhaul possible.
- Responsibilities of a non-federal partner: Partners may not be aware of how a CESU works and the responsibilities that partners assume when they join the network. The responsibilities are reasonable but some partners may not be willing to commit the necessary time (e.g., participate in CESU meetings, share the agency requests for proposals throughout the institution, provide project highlights and pics for the website, periodically populate the NAC-CESU project database with products, engage students, others). These responsibilities will be communicated to each partner via the website, email, and Managers Committee meetings.
- Promote student opportunities: Academic institutions are seeking funding and experiential learning opportunities for students, while federal agencies have an interest in supporting students with career-goals in natural and cultural resource stewardship. The NAC-CESU, with the NPS and some participating universities, has implemented a student internship program that should be of interest to other agencies. This will be highlighted on the revised website and upcoming meetings.

Cooperators from the University of Rhode Island, Environmental Data Center

— Erin Finicane, NPS

3) *What percentage of partners received funding through the CESU over the current five-year term? Provide details (e.g., partner funding statistics, notable barriers, successful approaches).*

Sixteen of the twenty-five non-federal partners (64%) received funding through the NAC-CESU during the assessment period (Table 3). It is noted that several institutions have received no funding administered through the NAC-CESU since their membership in the program began (Manhattan College, Marine Biological Lab, Maryland Coastal Bays Program, University of Connecticut, University of New England, Virginia Aquarium). All non-federal partners and the tribal partner receive the agency funding opportunity announcements and perhaps some of these institutions have responded to funding announcements but have not been selected for support by the agency. The host university has and will continue to emphasize to each partner's technical representative the value of notifying investigators within their institutions of NAC-CESU funding opportunity announcements.

Dr. Charles Flagg, from the School of Marine and Atmospheric Sciences at Stony Brook University, prepares his plane for a flight over the Fire Island breach.

—Sarah Gulick, NPS

Table 3. NAC-CESU federal agency funding awarded to partners during the 2014-2018 assessment period. Project details (title, partner, start/end dates, amount) are provided in Appendix 1. Key to agencies; DOD (Department of Defense), NPS (National Park Service), USACOE (US Army Corps of Engineers).

Non-Federal Partner	Agency	Number of awards	Funds received
Bates College			
Biodiversity Research Institute	DOD	1	$48,620
	NPS	3	$335,828
City University of New York	NPS	5	$1,253,007
College of the Atlantic	NPS	1	$24,440
Columbia University			

Cornell University	DOD	1	$59,645
	NPS	3	$340,908
Harvard University	NPS	1	$77,000
Manhattan College			
Marine Biological Laboratory			
Maryland Coastal Bays Program			
Northeastern University	NPS	1	$58,750
	USACOE	2	$207,286
Provincetown Center for Coastal Studies	NPS	5	$949,926
Rutgers University	NPS	13	$2,898,743
Schoodic Education and Research Center	NPS	3	$131,866
SUNY-School of Environmental Science and Forestry	DOD	1	$33,670
	NPS	21	$1,792,828
Stony Brook University	NPS	13	$1,654,825
	USACOE	1	—
University of Connecticut			
University of Maryland Center for Environmental Science			
University of Maryland Eastern Shore	NPS	2	$69,256
University of Massachusetts at Amherst	DOD	2	$152,770
	NPS	8	$578,118
University of Massachusetts at Boston	NPS	4	$202,988
University of Maine	DOD	1	$19,211
	NPS	4	$116,914
University of New England			
University of Rhode Island	NPS	18	$4,486,135
Virginia Aquarium and Marine Science Center Foundation, Inc.			
Tribal Partner			
Narragansett Indian Tribal Historic Preservation Office			
Grand total		**114**	**$15,492,734**

4) *What efforts were made to encourage and broaden participation in the CESU by all partners (e.g., HBCUs, tribal colleges, small academic institutions, state and local government agencies)? Provide details (e.g., participation statistics, challenges to participation, successful and/or novel approaches).*

As noted previously, in 2009 (College of the Atlantic), 2012 (UMass-Boston) and during the current assessment period, 2014 (University of Maryland Eastern Shore – an Historically Black College and University, and CUNY), the NAC-CESU in cooperation with funding from the NPS established student internship relationships. The purpose was to engage the smaller and/or less active CESU institutions, and in the case of UMass-Boston and University Maryland Eastern Shore the goal was also to enhance opportunities for minority students to participate in natural resource stewardship. The now completed College of the Atlantic program was very successful, as are the ongoing internship programs. It is hoped that the NPS will have funds available to continue this student internship program, and moreover, perhaps other federal agencies will be stimulated to provide funding in support of similar NAC-CESU student internship programs. While introducing students to federal agency resource management challenges, these internships also serve to engage faculty, hopefully building new collaborations with federal scientists and managers.

Nekton sampling at Sagamore Hill NHS, 2015 — John Lee

5) *What is the date of the most current version of the CESU's strategic plan? How well do the activities of the CESU reflect the priorities and objectives outlined in the plan? Provide details (e.g., challenges, best practices, example projects).*

The Strategic Vision Statement for the NAC-CESU was adopted in 2000 and updated in October 2003 (http://www.naccesu.org/). The Statement defines what constitutes a NAC-CESU activity, identifies general research and technical assistance themes, and highlights the education role (student education and collaborative education opportunities for federal scientists and managers) and avenues to facilitate information exchange and outreach. Although the NAC-CESU has grown substantially since the latest version of the Strategic Vision, the research, technical assistance, and education objectives for the NAC-CESU seem relevant today. Only minor modifications would be required of a revised Vision Statement. A full review is planned following the completion of the new website.

6) *Did the participating federal agencies, host university, tribal, and nonfederal partners develop and follow annual work plans to guide the activities of the CESU? Provide details (e.g., challenges, successful approaches, example projects).*

The NAC-CESU does not develop annual work plans. A majority of the research, technical assistance and student support activities are dictated by availability of federal funds, with federal priorities for projects determined by the agencies. However, there is input from the non-federal NAC-CESU investigators through close collaboration on projects with federal scientists and managers and through this interaction there are often discussions on next steps to pursue toward addressing a particular issue. As well, many of the project final reports submitted to federal agencies contain a section on future research needs. These collaborations are often the genesis of new funding opportunities.

In previous years the National Park Service-Northeast Region provided an annual budget to the NPS NAC-CESU to support research, technical assistance and education opportunities that addressed resource management issues confronting coastal National Park units in the northeast (these funds were independent of specific research project funds). Through collaboration with park personnel and non-federal NAC-CESU partners, various efforts were considered and supported on an annual basis (i.e. work plans), including the student internship programs at College of the Atlantic and University of Maryland Eastern Shore, special topic workshops (e.g., "Research Needs to Address Climate Change in Coastal Parks," "Statistics for Park Managers"), research needs catalogues for individual park units (e.g., Acadia National Park, Gateway National Recreation Area), student thesis research, support for students and park scientists to attend professional meetings, and other activities that were closely aligned with advancing the CESU concept. These funds allowed the NAC-CESU to plan future activities and focus areas, without being tied to specific project funds. Unfortunately, in recent years these NPS funds dedicated to the NAC-CESU have been limited.

Ryan Anderson
— Ryan Wallace, Stony Brook University

7) *Have partners successfully obtained the tribal, federal, state, or local government permits and/or permissions from private landowners necessary to execute projects under the CESU agreement over the current five-year term? Provide details (e.g., challenges, successful approaches, examples).*

Study proposals or work plans, approved by the supporting federal agency, are required prior to the obligation of funds to the non-federal partner. It is assumed that the non-federal and federal agency review and approval processes will insure that necessary permits and/or permissions have been obtained. The NAC-CESU Director's office has not been informed of any problems regarding this issue. Perhaps a standard clause to address this issue should be included in future Master CESU Cooperative Agreement and/or CESU funding documents (e.g., modifications to the master Cooperative Agreement). It is noted that researchers are made aware that the NPS requires all CESU-supported project investigators to obtain a research permit through the "Research Permit and Reporting System" (https://irma.nps.gov/rprs/). Other agencies may have similar requirements.

8) *What instances exist where projects, programs, or partners have derived benefit as a result of the established CESU relationship, independent of federal awards administered through the CESU (i.e., where simply being a partner in the CESU aided furtherance of other efforts; without/outside direct funding through a CESU project award)? Provide a brief description of any such examples.*

An excellent example pertains to the NPS Northeast Coastal and Barrier Network inventory and monitoring program. Funds to support the development of long-term monitoring protocols by CESU cooperators, as well as funding support to implement some of the monitoring efforts, are administered through the NAC-CESU cooperative agreement. This NPS monitoring effort has gained much notoriety and respect, to the point where other agencies (federal and state) are adopting the monitoring protocols that have been developed by NAC-CESU investigators. For example, the USFWS has provided funding to the Rutgers University investigator who designed the NPS shoreline change monitoring protocol to adapt it for coastal Refuges. Similarly, the NOAA National Estuarine Research Reserve System is utilizing, with modification, monitoring protocols developed for the NPS by NAC-CESU investigators from URI and Stony Brook University; salt marsh vegetation change and seagrass habitat monitoring, respectively. Rhode Island state agencies have modified the NPS salt marsh vegetation and nekton monitoring protocols for their long-term assessment efforts. This sharing of research products and expertise among multiple federal agency programs demonstrates the broader value and application of NAC-CESU studies.

Collecting elevation in the marsh —URI-EDC

Appendix 1: NAC-CESU Funded Projects, 2014 through 2018

Active projects (defined as completed or ongoing during the 2014-2018 assessment period) administered through the NAC-CESU cooperative agreement are listed by funding agency and non-federal partner. The lead principal investigator, project title, amount of obligated funds for each federal fiscal year (FY), and project start and end date are shown. The number in front of each project corresponds to the project number. NAC-CESU products (e.g., theses, publications, presentations) that are listed in **Appendix 3** are linked to a specific funded project.

National Park Service

Biodiversity Research Institute

1. Divoll, T. Activities and habitat preferences of remnant populations of *Myotis* bats in Acadia NP, Maine. $130,000 (FY14). 6/1/14-9/30/17.

2. Divoll, T. Identifying late summer activities and habitat preferences of remnant populations of *Myotis* bats in Acadia NP, Maine. $94,000 (FY15), $97,727 (FY16), total: $191,727. 9/3/15-9/30/17

3. Yates, D. Survey post white-nose syndrome bat populations in Marsh-BillingsRockefeller National Historical Park, Vermont and Saint-Gaudens National Historic Site, New Hampshire. $14,101.29 (FY16). 8/1/16-12/31/17.

City University of New York

4. Branco, B. Detecting water quality regime shifts in Jamaica Bay (Post-Hurricane Sandy study). $282,998 (FY14). 9/11/14-9/1/17.

5. Marra, J. The Jamaica Bay observing system: Process studies and groundwork for long-term ecosystem research and resilience (Post-Hurricane Sandy study). $789,794 (FY14). 9/8/14-6/30/18.

6. Shanley, D. Expand internship program and research-based education and teacher professional development program. $48,215 (FY14). 9/22/14-12/31/18.

7. Solecki, W. Science and resilience Institute at Jamaica Bay: Coordination of DOI and NPS Sandy resiliency projects. $85,000 (FY14). 9/10/14-6/1/17.

8. Waldman, J. The environmental history of Jamaica Bay: a foundational document (Post-Hurricane Sandy study). $47,000 (FY14). 9/8/14-3/1/17.

College of the Atlantic

9. Rajakaruna, N. Train students in herbarium management and catalog and digitize herbarium specimens for public education and research. $24,440 (FY14). 6/14-4/30/17.

Cornell University

10. Bassuk, N. Condition assessment of and development of best management practices for the National Mall's Elm Tree panels. $57,000 (FY17), $12,786 (FY18), total: $69,786. 5/25/17-12/31/18.

11. Manning, S. Geophysical survey of fossil trackways and lake formations. $30,122 (FY17). 6/6/17-10/31/18.

12. Rice, A. Passive acoustic monitoring for fish population restoration and climate mitigation. $25,000 (FY16), $216,000 (FY17), total: $241,000. 9/1/16-9/30/19.

Harvard University

13. Gates, H. Historic resource study: African-American civil rights leaders and the Roosevelts Park Unit: Home of Franklin D. Roosevelt NHS and Eleanor Roosevelt NHS. $77,000 (FY17). 6/28/17-5/31/21.

Northeastern University

14. Cain, V. National register of historic places documentation, Longfellow-House at Washington's Headquarters National Historic Site. $58,750 (FY16). 9/14/16-12/31/18.

Provincetown Center for Coastal Studies

15. Borrelli, M. Coastal ecosystem evolution along Cape Cod National Seashore from Long Point to Race Point: Multi-tiered, science-based management of natural resources and infrastructure. $122,134 (FY16), $89,230 (FY17), total: $211,364. 8/25/16-8/31/21.

16. Borrelli, M. Collaborative planning and implementation support for Cape Cod National Seashore priorities, 2015-2017. $65,994 (FY15). 8/12/15-12/31/18.

17. Borrelli, M. Submerged habitat mapping: Cape Cod National Seashore: A post-Hurricane Sandy study. $509,997 (FY14). 7/9/14-3/1/17.

18. Costa, A. Water quality analysis of estuarine and freshwater samples. $20,000 (FY17), $37,000 (FY18), total: $57,000. 7/17/17-12/31/17.

19. Nichols, O. Assessing the benthic community in a partially restored lagoon to improve management decision-making. $96,195 (FY17), $9,376 (FY18), total: $105,571. 9/11/17-3/31/20.

Rutgers University

20. DeLuca, M. Collection of high-resolution topographical data and development of metrics associated with Superstorm Sandy impacts, recovery, and coastal geomorphology resiliency, Gateway NRA. $161,873 (FY14), $9,169 (FY16), total: $171,042. 7/8/14- 3/1/17.

21. Psuty, N., M. Impacts of Superstorm Sandy: Coastal adaptation for affected parks and revegetation, Staten Island Unit, Gateway NRA NY & NJ. $49,992 (FY14). 9/30/14- 9/30/16.

22. DeLuca, M. Post-Hurricane Sandy-submerged marine habitat mapping: A foundation for enhancing resilience to climate change and other stressors at Gateway National Recreation Area. $300,000 (FY14). 5/19/14-3/1/17

23. DeLuca, M. Submerged marine habitat mapping: Ocean side of Gateway National Recreation Area. Sandy Hook Unit (post-Hurricane Sandy study). $509,999 (FY14). 9/16/14-9/1/17.

24. Handel, S. Assessment of vegetation condition in long-term Deer exclosures. $30,000 (FY18). 7/30/18-9/30/19.

25. Handel, S. Conduct vegetation inventory of forest gaps at Morristown National Historic Park. $37,000 (FY17). 8/1/17-9/30/18.

26. Handel, S. Restoration of Jamaica Bay fringing habitats: post-Sandy status and new approaches for a resilient future- Hurricane Sandy Project. $482,920 (FY14). 9/19/14- 12/13/17.

27. Maslo, B. Monitoring and management of white nose syndrome affected bats. $48,213 (FY18). 7/24/18-7/31/20.

28. Psuty, N. Evaluation of dune and beach restoration and resilience at selected sites in the Mid-Atlantic Region. $650,296 (FY17). 9/21/17-9/30/22.

29. Psuty, N. Geomorphological change: Reporting, monitoring and development of the three-dimensional protocol for landform evolution, Gateway National Recreation Area. $49,991 (FY16), $65,064 (FY17), total: $115,055. 7/15/16-1/31/19.

30. Psuty, N. Monitoring and evaluation of restoration and resilience: Jamaica Bay Unit, shoreline and geomorphology - Post Hurricane Sandy. $328,698 (FY14). 8/22/14-9/1/17.

31. Veit, R. Geophysical and archeological survey at Fort Hill, Morristown National Historic Park. $76,536 (FY16). 9/20/16-7/31/19.

32. Winfree, R. Forest bee - plant network assessment at Great Lakes (GLKN) Parks- MWRO. $98,992 (FY17). 9/14/17-9/30/21.

Schoodic Institute

33. Fisichelli, N. Assessing the factors affecting the condition of vegetation in Eastern NPS Parks. $85,134.64 (FY18). 9/4/18-4/30/20.

34. Fisichelli, N. Provide technical assistance for invasive species assessment to protect park resources and increase public awareness. $32,670 (FY18). 9/5/18-12/31/19.

35. Zoellick, B. Strengthening citizen science in the study of mercury in dragonflies. $14,061 (FY14). 8/1/14-9/30/15.

State University of New York– College of Environmental Science and Forestry

36. Auwaerter, J. Assist NPS Northeast Region Parks with cultural landscape inventory and treatment. $90,000 (FY15). 9/1/15-12/31/16.

37. Auwaerter, J. Assist with ongoing cultural landscape planning at Harriett Tubman National Historical Park. $87,000 (FY17). 8/22/17-9/30/19.

38. Auwaerter, J. Conduct 2015 cultural landscape preservation field school at Acadia NP. $49,563 (FY15). 4/30/15-9/30/15.

39. Auwaerter, J. Document, evaluate and prescribe treatment of cultural resources at Fredericksburg National Cemetery. $72,500 (FY16). 8/1/16-12/31/19.

40. Auwaerter, J. Document, evaluate and prescribe treatment of cultural resources at Harriet Tubman National Monument. $85,000 (FY16). 8/1/16-8/31/16.

41. Auwaerter, J. Document, evaluate and prescribe treatment of cultural resources at Wilderness Battlefield National Military Park. $60,000 (FY16). 8/1/16-12/31/18.

42. Auwaerter, J. Document, evaluate and prescribe treatment, cultural landscape of Gettysburg NMP, First Day Union 1st Corps Battlefield. $120,000 (FY15). 6/25/16- 7/31/17.

43. Auwaerter, J. Landscape preservation planning. $135,000 (FY18). 7/26/18-12/31/20.

44. Auwaerter, J. Prescribe treatment, cultural landscape of Gettysburg National Cemetery, Gettysburg National Military Park. $40,000 (FY14). 8/26/14-2/29/16.

45. Auwaerter, J. Provide cultural landscape inventory and preservation technical assistance to NPS Northeast Regional Parks. $93,000 (FY17). 9/21/17-12/31/19.

46. Auwaerter, J. Research, inventory, and evaluate cultural landscape of Blow-Me- Down Farm, Saint-Gaudens National Historic Site. $65,000 (FY17). 6/12/17-5/31/19.

47. Cohen, J. Importance of Cape Cod National Seashore to staging endangered Roseate Terns. $26,297 (FY14), $34,271 (FY15), $30,694 (FY16), total: $91,262. 9/1/15-12/31/17.

48. Farrell, S. Assessment of bat populations and white-nosed syndrome at Cape Cod National Seashore. $76,200 (FY15). 9/21/15-7/31/18.

49. Farrell, S. Assessment of bat populations and white-nosed syndrome at Cape Cod National Seashore and Fire Island. $82,293 (FY14). 8/4/14-12/31/15.

50. Farrell, S. Fall migration, swarming and hibernation ecology of Northern Long-Eared Bats at CACO, and implications for ameliorating impacts of white-nose syndrome. $199,569 (FY16). 9/22/16-9/30/20.

51. Gibbs, J. Assessment of natural resource conditions for Martin Van Buren National Historic Site. $50,011 (FY17). 9/21/17-7/15/19.

52. Gibbs, J. Assessment of natural resource condition for Saint-Gaudens National Historic Site. $44,811 (FY16). 8/16/16-5/31/18.

53. Gibbs, J. Reptile and amphibian surveys of Franklin D. Roosevelt NHS. $34,000 (FY14). 9/15/14-12/31/17.

54. Johnston, J. Provide cultural landscape inventory and technical preservation support to NPS Northeast Region Parks. $48,000 (FY14). 8/15/14-9/29/15.

55. O'Connell, C. Inventory and monitoring science communication workshop. $31,172 (FY14). 7/9/14-9/30/15.

56. Tierney, G. Assessment of natural resource condition for Weir Farm National Historic Site. $45,000 (FY14). 8/19/14-6/30/16.

57. Underwood, B. Impacts of Hurricane Sandy and white-tailed deer (*Odocoileus virginianus)* on maritime vegetation recovery at Fire Island National Seashore (FIIS). $224,619 (FY14). 7/9/14-3/1/17.

Stony Brook University

58. Cochran, K. Health and resiliency of salt marshes in Jamaica Bay: Post-Hurricane Sandy. $275,987 (FY14). 8/26/14-3/1/17.

59. Flagg, C. Continuation of physical monitoring of the Old Inlet breach, Fire Island National Seashore. $174,758 (FY14). 7/1/14-3/1/17.

60. Flagg, C. Continuation of post-Hurricane Sandy physical monitoring of the Old Inlet breach, Fire Island National Seashore. $9,635 (FY18). 8/13/18-4/30/19.

61. Gobler, C. Acidification, hypoxia, and algal blooms: Barriers to current and future ecosystem restoration and climate change resilience in Jamaica Bay- Post-Hurricane Sandy study. $246,521 (FY14). 8/22/14-3/1/17.

62. Gobler, C. Assessing the response of the Great South Bay plankton community to Hurricane Sandy. $199,118 (FY14). 7/9/13-3/1/17.

63. Gobler, C. Assessing the response of indicator bacteria in Great South Bay to Hurricane Sandy. $49,998 (FY14). 9/16/14- 9/16/16.

64. Gobler, C. Assessing the response of juvenile and adult hard clams to the new breach in Great South Bay: Post-Hurricane Sandy study. $98,193 (FY14). 6/17/14-3/1/16.

65. Nye, J. Effects of a storm-induced barrier breach on community assemblages and ecosystem structure within a temperate lagoonal estuary (post-Hurricane Sandy study). $149,995 (FY14). 9/15/14-3/1/17.

66. Peterson, B. Assessing the response of the Great South Bay estuarine fauna to Hurricane Sandy: Focus on nekton utilization of seagrass habitats. $129,853 (FY14). 6/17/13-3/1/17.

67. Peterson, B. Impact of Hurricane Sandy on the Fire Island National Seashore (FIIS) water quality and seagrasses resources (revised to include 2015 and 2016 field sampling). $198,610 (FY14). 7/22/11-3/1/17.

68. Peterson, B. Monitoring estuarine condition at Fire Island National Seashore and Gateway National Recreation Area. $40,199 (FY18). 6/28/18-6/30/21.

69. Peterson, B. Monitoring estuarine condition and seagrass in NPS Northeast Coastal and Barrier Network Parks. $7,863 (FY16), $42,923 (FY17), total: $50,786. 3/29/16-9/28/18.

University of Maine

70. Blomberg, E. Conserving WNS affected bat populations in Acadia National Park: The case for continued studies, monitoring, information sharing, and proactive mitigation. $14,912 (FY18). 8/6/18-2/1/19.

71. Nelson, S. GLKN Monitoring larval dragonflies for mercury. $30,000 (FY16). 9/2/16-12/31/21.

72. Jordaan, A. Assessment of Temporal Changes in Forest Conditions in the Chisos Mountains of Big Bend National Park. $40,883 (FY18). 6/18/18-12/31/20.

73. Nelson, P. Mapping lichen cover and biomass in the Western caribou Arctic herd home range. $31,119.16 (FY15). 9/9/15-9/30/19.

University of Maryland, Eastern Shore

74. J. Student internship program at Assateague Island National Seashore. $37,014 (FY14). 8/14/14-8/14/19.

75. Stevens, B. Assess the feasibility of oyster restoration at Assateague Island National Seashore. $32,242 (FY18). 9/20/18-8/28/20.

University of Massachusetts, Amherst

76. Glassberg, D. Produce special history on the outdoor recreation resources review committee. $53,999 (FY18). 9/18/18-12/31/21.

77. Hart, D. Create mobile collection-based application for Eleanor Roosevelt NHS. $79,999 (FY15). 7/30/15-11/30/17.

78. Hart, D. Create mobile collection-based application for Springfield Armory NHS. $69,998 (FY15), $10,000 (FY16), $10,000 (FY17), total: $89,998. 9/11/15- 6/30/17.

79. Hill, M. Ethnographic overview and assessment Fort Stanwix NM. $75,000 (FY15). 9/21/15-12/31/18.

80. Hill, M. Ethnography: Ethnographic overview and assessment for Mount Rushmore National Memorial, South Dakota - MORU. $89,927 (FY15), $102,194 (FY16), total: $192,121. 8/10/15-6/30/19.

81. Jordaan, A. Buck Island Reef National Monument acoustic array collaboration. $35,000 (FY16). 8/1/16-7/31/20.

82. Mabee, S. Evaluating potential National Natural Landmarks. $17,000 (FY14), $10,000 (FY16), total: $27,000. 8/14/14-9/30/19.

83. Miller, M. National Register of historic places documentation, Roger Williams National Memorial. $25,000 (FY16). 9/13/16-10/1/18.

University of Massachusetts, Boston

84. Hannigan, R. Internships to enhance diversity among natural resource professionals. $22,000 (FY18). 9/18/18-9/30/21.

85. Landon, D. Curating Boston African American National Historic Site archeology collections: Practical guidance on implementing preservation standards and strategies. $75,000 (FY18). 9/4/18-9/30/19.

86. Mrozowski, S. Inventory and monitor endangered archeological sites at Great Island and Great Beach Hill, Cape Cod National Seashore, Wellfleet, Massachusetts. $79,988 (FY17). 8/25/17-9/30/19.

87. Wiggin, J. Internships to enhance diversity among natural resource professionals award. $26,000 (FY16). 9/4/12-9/30/17.

University of Rhode Island

88. August, P. Acquisition coordination, compilation, data management and change analysis of LiDAR and other geospatial data collected pre- and post- Hurricane Sandy. $565,722 (FY14). 7/30/13-9/30/17.

89. August, P. Development of a web-based system to geo-enable NER parks and programs. $35,000 (FY17). 9/15/17-9/30/18.

90. August, P. Evaluation mapping of critical park areas for planning and post- and future storm evaluation and modeling. $768,864 (FY14). 7/30/13-9/30/17.

91. August, P. Resource based geospatial and enterprise GIS support to the Northeast Region of the National Park Service. $188,397 (FY15), $117,370 (FY16), $92,070 (FY17), $92,070 (FY18), total: $489,907. 9/1/15-12/31/18.

92. Druschke, C. Post Hurricane Sandy - science communication and outreach. $67,440 (FY15). 3/25/15-10/31/16.

93. Ginis, I. Assessing Nor'easter vulnerability for three New England parks. $268,290 (FY18). 9/26/18-3/31/20.

94. James-Pirri, MJ. Restoration monitoring at Saugus Iron Works National Historic Site, 2014-2016. $74,000 (FY14). 9/10/14-12/31/17.

95. James-Pirri, MJ. Support and technical assistance for National Park Service, North Atlantic Coast Cooperative Ecosystem Studies Unit at the University of Rhode Island 2015-2017. $20,000 (FY15). 8/24/15-6/30/17.

96. Jensen, J. Develop a historic commercial landscape inventory for Russian America from ~ 1750 to 1867. $21,000 (FY14). 9/4/14-12/31/15.

97. Karraker, N. Inventory of amphibians and reptiles at Colonial National Historical Park. $93,800 (FY15), $69,627 (FY17), total: $163,427. 9/21/15-12/31/18.

98. Karraker, N. Inventory and monitoring of amphibians and reptiles at Fire Island National Seashore, Sagamore Hill National Historic Site, and Gateway National Recreation Area following Hurricane Sandy. $255,577 (FY14). 7/16/13-12/31/16.

99. King, J. Post Hurricane Sandy submerged marine habitat mapping, Fire Island National Seashore. $865,000 (FY14). 5/6/14-3/1/17

100. King, J. Submerged habitat mapping at Northeast Region Coastal Parks: Coordination and synthesis of Post-Hurricane Sandy mapping programs. $220,000 (FY14), $24,600 (FY17), total: $244,600. 8/4/14-7/1/18.

101. Menezes, S. Science communication outreach for the Northeast Coastal and Barrier Network. $40,493 (FY16), $69,994 (FY17), total: $110,487. 8/9/16-9/30/18.

102. Ricci, G. Conducting a vulnerability assessment at George Washington Birthplace National Monument and identifying options to increase resilience at multiple parks. $106,327 (FY18). 9/20/18-2/28/20.

103. Rubinoff, P. Guidance for the National Park Service in conducting vulnerability assessments in the Northeast Region. $30,495 (FY14), $125,000 (FY15), $49,999 (FY16), total: $205,494. 7/30/14-12/31/17.

104. Swift, J. CESU NOAT - leadership, coordination and administrative oversight for the North Atlantic Coast Cooperative Ecosystem Studies Unit. $16,000 (FY17), $9,000 (FY18), total: $25,000. 8/31/17-12/31/20.

105. Wang, YQ. Post Hurricane Sandy salt marsh change detection and development of salt marsh change detection protocol for the Northeast Coastal Parks. $200,000 (FY14). 5/2/14-6/30/18

Department of Defense

Biodiversity Research Institute

106. DeSorbo, C. Conduct bat and high elevation bat surveys at three Navy installations in Maine. $25,216 (FY17), $23,403 (FY18), total: $48,619.71. 5/31/17-11/30/18

Cornell University

107. Rohrbaugh, R. Golden-winged warbler genetic project. $59,645 (FY15). 7/10/15-2/28/17.

University of Maine

108. Roth, A. Bicknell's home range and habitat use survey. $19,211 (FY18). 9/17/18-3/17/20.

University of Massachusetts (Amherst)

109. King, D. Whip-poor-will habitat research at Fort Drum. $42,771 (FY15), $54,499 (FY16). Total: $97,269.75. 5/15/15-11/30/17.

110. Siqueira, P. S-Band SAR measurements of snow. $55,500 (FY16). 3/18/16-4/10/17.

State University of New York – Natural Heritage Program

111. Evans, D. Small Whorled Pogonia Survey at West Point Academy. $33,670 (FY18). 3/9/18-9/30/18.

Army Corps of Engineers

Northeastern University

112. Carbon Nanotube (CNT) sensors to enable real-time distributed sensing of contaminants in water. $61,2003 (FY 17), $66,083 (FY18), total: $127,286 10/1/17-9/1/19.

113. Nearshore coastal numerical model, CSHORE, to calculate benefits of vegetated shorelines. $80,000 (FY18). 7/2/18-7/1/19.

The Research Foundation of State University of New York (SUNY)

114. Determining dredging windows in the marine waters of New York State. $0 (FY 14). 2/1//11-4/30/14.

Appendix 2; NAC-CESU Host University financials, 2014 through 2018

Three financial items are presented in this Appendix, each related to University of Rhode Island operation of the NAC-CESU.

- Budget and expenditures of Department of Defense funds ($10,000) as they became a member of the NAC-CESU
- Budget and expenditures for funds provided by the CESU National Network Office
- In-kind budget and expenditures by University of Rhode Island related to NAC-CESU operations

URI budget and expenditures: funds received from Department of Defense

	Agency: Department of Defense (FY13-FY18)	
	Opening Balance	$ 10,000.00
1	Personnel	$ 4,392.84
2	Domestic Travel	$ 2,891.85
3	Operating	$ 1,000.00
4	Supplies	$ 87.45
5	Indirect Costs	$ 1,290.14
	Total Expenses	**$ 9,662.28**
	Remaining Balance	$ 337.72
1	Personnel includes salary for professional staff to participate in National CESU meetings and provide technical expertise on NAC-CESU website.	
2	Domestic travel transportation to CESU-related national and local meetings.	
3	Operating includes URI Environmental Data Center fee for NAC-CESU website and database maintenance, storage, and security.	
4	Supplies include binders and folders for meeting and information organization.	
5	Indirect costs include overhead charges at the negotiated rate of 17.5%.	

URI budget and expenditures: funds received from CESU National Office

CESU Host Funds					
		Budget	Expended	Encumbered	Remaining
1	Personnel	7,110	4,615	2,307	188
2	Students	2,090	0	0	2,090
3	Consultants	9,100	0	3,200	5,900
4	Fringe	550	353	0	197
5	Domestic Travel	2,427	832	0	1,595
6	Indirect Costs	3,723	1,015	964	1,744
	TOTAL	25,000	6,815	6,471	11,714
	Balance				11,714

1 Personnel includes hourly pay for professional staff to analyze and document CESU data

2 Students include hourly pay for student to assist in research and information gathering tasks

3 Consultant include funds for website design and maintenances, as well as database creation and population.

4 Fringe includes FICA for hourly staff and students.

5 Domestic travel includes transportation to CESU-related national and local meetings

6 Consultant include funds for website design and maintenances, as well as database creation and population.

In-kind Support by University of Rhode Island for CESU operations

In-kind Support - University of Rhode Island Coastal Institute					
	2014	**2015**	**2015**	**2017**	**2018**
15% Director Effort (salary & benefits)	33,066	34,058	35,080	36,133	37,217
10% Administrative Effort (salary & benefits of support person)	9,912	10,209	10,516	10,831	11,156
Consultant services (graphic design)	0	0	0	760	0
Travel	0	0	0	965	0
Computers & Software	0	0	0	0	1,185
Office Expense (supplies, telephone, printing)	250	250	250	719	250
Annual Totals	**43,228**	**44,518**	**45,846**	**49,407**	**49,808**
Overall Total	**232,807**				

Appendix 3: NAC-CESU Products, 2014 through 2018

This Appendix lists theses, dissertations, peer-reviewed publications and technical reports, professional presentations, public talks, university courses and lectures, and related informational material (e.g., websites, digital data, blog posts) that resulted from projects funded through the NAC-CESU during the 2014-2018 assessment period. Each item is cross-referenced to a NAC-CESU funded project (the number in parentheses is the project number as found in the list of NAC-CESU projects, Appendix 1). Informational materials without numbers were a result of projects funded prior to this assessment period (prior to 2014), but were published or presented during the 2014-2018 assessment period. Additionally, products resulting from collaborative interactions among federal and non-federal partners that may or may not have been directly related to a funded project are also listed and are noted as "collaborative"

This appendix lists the following products that are related to NAC-CESU funded projects;

- Masters Theses
- Dissertations
- Professional Publications
- Technical Reports
- Professional Presentations (meetings, conferences, symposia, workshops)
- Public Presentations
- University Courses and Lectures
- Magazine Articles/Newspaper Articles/Interviews
- Internet Media: Photo Stories, Researcher Profiles, Resource Briefs, Outreach Materials
- Internet Media: Films & Videos
- Internet Media: Digital data, Digital maps, GeoSpatial Datasets
- Internet Media: Websites, Webinars, and Blog posts
- Other outreach

Masters Theses *(20)*

Althouse, M. 2016. Behavioral and demographic effects of anthropogenic disturbance to staging roseate terns (*Sterna dougallii*) in the Cape Cod National Seashore. Master's Thesis. State University of New York- College of Environmental Science and Forestry, Syracuse, NY. (47)

Becker, S. 2016. Spatial ecology of Great Barracuda (*Sphyraena Barracuda*) around Buck Island Reef National Monument, St. Croix, Virgin Islands. Master's Thesis, University of Massachusetts Intercampus Marine Science Graduate Program, Boston, MA. (72)

Bernard, K. 2014. Colony movement dynamics and management by repellents of the European red ant *Myrmica rubra* (L.) (Hymenoptera: Formicidae). Master's Thesis, University of Maine, Orono, ME. https://digitalcommons.library.umaine.edu/etd/2080/

Casselberry, G. In Progress. Master's Thesis, University of Massachusetts Intercampus Marine Science Graduate Program, Boston, MA. (72)

Cressman, J. Assessing shrubland dynamics on Napatree Point, Watch Hill, RI. Master's Thesis. Environmental Science and Management, University of Rhode Island, Kingston, RI. (91)

Curry, R. B. In Progress. Master's Thesis. Environmental and Forest Biology, State University of New York- College of Environmental Science and Forestry, Syracuse, NY. (48, 49, 50)

Curtin, J., In Progress. Horseshoe crab spawning dynamics in a partially restored back-barrier salt marsh lagoon on Cape Cod, MA. Master's Thesis, Antioch University, Keene, NH. (19, collaborative)

Dean, S. 2017. Distribution, abundance, and habitat associations of amphibians and reptiles within an urban protected area: The Home of Franklin D. Roosevelt National Historic Site. Master's Thesis. State University of New York- College of Environmental Science and Forestry, Syracuse, NY. (53)

Farmer, M. In Progress. Influences on spat settlement in the Maryland Coastal Bays. Master's Thesis, Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD. (74)

Fletcher, J., 2017. Habitat use and species assemblage of bats in a northeastern coastal plain ecosystem. Master's Thesis. Environmental and Forest Biology, State University of New York-College of Environmental Science and Forestry, Syracuse, NY. https://digitalcommons.esf.edu/etds/1 (48, 49, 50)

Grunzel, D. 2014. Migratory distance and predation risk as drivers of behavioral tradeoffs made by passerines during fall stopover. Master's Thesis, Ecology and Environmental Sciences, University of Maine, Orono, ME. https://digitalcommons.library.umaine.edu/etd/2176/

Hess, M, In Progress. Temporal variation of mercury concentrations via aquatic insects in Acadia National Park. Master's Thesis in Ecology and Environmental Sciences, University of Maine (71).

House, K., 2017. Horseshoe crab population structure in a partially restored back-barrier salt marsh lagoon on Cape Cod National Seashore, MA. Master's Thesis, Conservation Biology, Antioch University, Keene, NH. (19, collaborative)

Jackson, L. 2014. The effect of patch dynamics and nutrient availability on the production of *Zostera marina* seeds within Shinnecock Bay, NY. Master's Thesis, Stony Brook University, Stony Brook, NY. https://cpb-us-e1.wpmucdn.com/you.stonybrook.edu/dist/d/479/files/2014/05/Jackson_2014_thesis-2efx3zr.pdf (68)

Jordan, D. In Progress. Black institutions of education and resistance: The Abiel Smith School. Master's Thesis in Historical Archaeology, University of Massachusetts Boston, MA. (85)

Neil, A. 2015. Understanding sea level rise modeling: An analysis of inundation and uncertainty for Coastal National Parks. Major Paper for Masters of Environmental Science and Management. University of Rhode Island, Kingston, RI. (collaborative)

Neville, C. In Progress. Master's Thesis in Landscape Architecture, State University of New York- College of Environmental Science and Forestry, Syracuse, NY (46)

Novak, A. 2018. Movers and stayers, movement ecology of yellowtail snapper *Ocyurus chrysurus* and horse-eye jack *Caranx latus* around Buck Island Reef National Monument, St. Croix, U.S. Virgin Islands. Master's Thesis, University of Massachusetts Intercampus Marine Science Graduate Program, Boston, MA. (72)

Patton, S. 2017. Springing forth anew: Progress, preservation, and park-building at Roger Williams National Memorial. Master's Thesis. University of Massachusetts-Amherst, Amherst, MA. (83)

Tinoco, A. 2017. Effects of Hurricane Sandy on Great South Bay, Long Island: Assessing water quality, seagrass and associated nekton communities. Master's Thesis. Stony Brook University, Stony Brook, NY. (68)

Dissertations *(7)*

Casey, A. 2018. Climate change and coastal cultural heritage: Insights from three National Parks. Dissertation. University of Rhode Island, Kingston, RI. Open Access Dissertations. Paper 745. http://digitalcommons.uri.edu/oa_diss/745 (103)

Collins, S-J. In progress. Working title: Swarming and spatial ecology of bats in the Cape Cod National Seashore, Massachusetts, with a particular focus on the Federally listed Northern long eared bat (*Myotis septentrionalis*). Dissertation. College of Environmental Science and Forestry, State University of New York, Syracuse, NY. (49)

Furman, B. 2015. Space acquisition strategies of *Zostera marina*. Dissertation. Stony Brook University, Stony Brook, NY. ProQuest: https://search.proquest.com/openview/5d-425017d5a13b9d4bc535c41c0a4cd2/1.pdf?pq-origsite=gscholar&cbl=18750&diss=y (67, 68)

Kang, X. In Progress. Modeling of wind and tidal influences in the Maryland Coastal Bays. Dissertation. Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, MD. (74)

Remillard, J. 2017. Teaching writing with play: a study of community–based science education in a National Park. Dissertation. University of Rhode Island, Kingston, RI. (88, 92)

Kilheffer, C. 2018. Plant community development in storm-induced overwash fans of the Otis Pike Fire Island High Dune Wilderness Area, New York. Dissertation. College of Environmental Science and Forestry, State University of New York, Syracuse, NY. (57)

McCabe, J. 2015. Explaining migratory behaviors using Optimal Migration Theory. Dissertation. University of Maine, Orono, ME. https://digitalcommons.library.umaine.edu/etd/2360/

Professional Publications *(Peer-reviewed journals, books, book chapter; 53) * indicates the lead author was a student*

*Althouse, M., J. Cohen, S. Karpanty, J. Spendelow, K. Davis, K. Parsons, C. Luttazi. 2018. Evaluating response distances to develop buffer zones for staging terns. *Journal of Wildlife Management*. DOI: 10.1002/jwmg.21594 (47)

*Althouse, M., J. Cohen, J. Spendelow, S. Karpanty, K. Davis, K. Parsons, C. Luttazi. 2017. Quantifying researcher effects on staging terns during intensive monitoring. *Waterbirds* 39:417-421. (47)

*Althouse, M., J. Cohen, J. Spendelow, S. Karpanty, K. Davis, K. Parsons, C. Luttazi. 2016. Quantifying the effects of research band resighting activities on staging terns in comparison to other disturbances *Waterbirds* 39(4):417-421. https://doi.org/10.1675/063.039.0412 (47)

*Becker, S., J. Finn, A. Danylchuk, C. Pollock, Z. Hillis-Starr, I. Lundgren, A. Jordaan. 2016. Influence of detection history and analytic tools on quantifying spatial ecology of a predatory fish in a marine protected area. *Marine Ecology Progress Series* 562:147-161. (72)

Berger, K., H. Ginsberg, K. Dugas, L. Hamel, T. Mather. 2014. Adverse moisture events predict seasonal abundance of Lyme disease vector ticks (*Ixodes scapularis*). *Parasites & Vectors* 7**:**181. (collaborative)

Berger, K., H. Ginsberg, L. Gonzalez, T. Mather. 2014. Relative humidity and activity patterns of *Ixodes scapularis* (Acari: Ixodidae). *Journal of Medical Entomology* 51:769-776. (collaborative)

Branco, B., J. Waldman. 2016. Resilience Practice in Urban Watersheds. *In*: Sanderson, E., W. Solecki, J. Waldman and A. Parris. *Prospects for Resilience: Insights from New York City's Jamaica Bay*. Washington DC: Island Press. (4)

Bustos, D., J. Jackway, T. Urban, V. Holliday, B. Fenerty, D. Raichlen, M. Budka, S. Reynolds, B. Allen, D. Love, V. Santucci, D. Odess, P. Willey, H. McDonald, M. Bennett 2018. Footprints preserve terminal Pleistocene hunt? Human-sloth interactions in North America. *Science Advances* 4: EAR7621. (11)

Cahoon, D., J. Lynch, C. Roman, J. Schmit, D. Skidds. 2019. Evaluating the relationship among wetland vertical development, elevation capital, sea-level rise, and tidal marsh sustainability. *Estuaries and Coasts* 42: 1-15 (published on-line August 20, 2018). (collaborative)

*Campbell, A., Y. Wang. 2018.Examining the influence of tidal stage on salt marsh mapping using high-spatial-resolution satellite remote sensing and topobathymetric LiDAR. *IEEE Transactions on Geoscience and Remote Sensing* 56(9): 5169 – 5176. DOI: 10.1109/TGRS.2018.2810503. https://ieeexplore.ieee.org/document/8327640 (105)

*Campbell, A., Y. Wang, M. Christiano, S. Stevens. 2017. Salt marsh monitoring in Jamaica Bay, New York from 2003 to 2013: A decade of change from restoration to Hurricane Sandy. *Remote Sensing* 9(2): 131: doi:10.3390/rs9020131, http://www.mdpi.com/2072-4292/9/2/131 (105, collaborative)

*Carroll, J., L. Jackson, B. Peterson. 2015. The effect of increasing habitat complexity on bay scallop survival in the presence of different decapod crustacean predators. *Estuaries and Coasts* 38: 1569-1579. (68)

*Casey, A. 2017. Bringing historical perspectives on climate into current adaptation practice. *In:* S. Weber, ed. 2017. *Connections Across People, Place, and Time: Proceedings of the 2017 George Wright Society Conference on Parks, Protected Areas, and Cultural Sites*. Hancock, Michigan. http://www.georgewright.org/1704casey.pdf (103)

*Clark, H. R., C.J. Gobler. 2016. Diurnal fluctuations in CO2 and dissolved oxygen concentrations do not provide a refuge from hypoxia and acidification for early-life-stage bivalves. *Marine Ecology Progress Series* 558: 1-14. https://www.somas.stonybrook.edu/?s=clark) (61)

Couret, J., M. Dyer, T. Mather, S. Han, J. Tsao, R. LeBrun, H. Ginsberg. 2017. Acquisition of *Borrelia burgdorferi* infection by larval *Ixodes scapularis* (Acari: Ixodidae) associated with engorgement measures. *Journal of Medical Entomology* 54:1055-1060. (collaborative)

Eagles-Smith, C., S. Nelson, C. Flanagan-Pritz, J. Willacker Jr., A. Klemmer. 2018. Total mercury concentrations in dragonfly larvae from U.S. National Parks (2014-2017): U.S. Geological Survey data release, https://doi.org/10.5066/P9TK6NPT. https://www.sciencebase.gov/catalog/item/5b92cffce4b0702d0e80a2d5 (71)

*Eddy, E., C. Roman. 2016. Relationship between epibenthic invertebrate species assemblages and environmental variables in Boston Harbor's intertidal habitat. *Northeastern Naturalist* 23: 45-66.

Flanagan Pritz, C., S. Nelson. 2017. Collecting data on charismatic mini-fauna: Public participation and the Dragonfly Mercury Project. *Maine Policy Review* 26.2: 50 -54, http://digitalcommons.library.umaine.edu/mpr/vol26/iss2/9. (71)

*Furman, B., B. Peterson. 2015. Sexual recruitment in *Zostera marina*: Progress toward a predictive model. *PLoS ONE* 10(9): e0138206. (68)

*Furman, B., L. Jackson, B. Peterson. 2017. Edaphic resource foraging by *Zostera marina* (Linnaeus) patches. *Journal of Experimental Marine Biology and Ecology* 486: 214-221. (68)

*Furman, B. T., L. J. Jackson, E. Bricker and B. J. Peterson. 2015. Sexual recruitment in *Zostera marina*: a patch to landscape-scale investigation. *Limnology and Oceanography* 60(2): 584-599. (67, 68)

Ginsberg, H., M. Albert, L. Acevedo, M. Dyer, I. Arsnoe, J. Tsao, T. Mather, R. LeBrun. 2017. Environmental factors affecting survival of immature *Ixodes scapularis* and implications for geographical distribution of Lyme disease: the climate/behavior hypothesis. *PLOS ONE* 12(1):e0168723. (collaborative)

Ginsberg, H., T. Bargar, M. Hladick, C. Lubleczyk. 2017. Management of arthropod pathogen vectors in North America: minimizing adverse effects on pollinators. *Journal of Medical Entomology* 54:1463-1475. (collaborative)

Ginsberg, H., C. Lee, B. Volson, M. Dyer, R. LeBrun. 2017. Relationships between maternal engorgement weight and the number, size, and fat content of larval *Ixodes scapularis* (Acari: Ixodidae). *Journal of Medical Entomology* 54:275-280. (collaborative)

Ginsberg, H., E. Rulison, A. Azevedo, G. Pang, I. Kuczaj, J. Tsao, R. LeBrun. 2014. Comparison of survival patterns of northern and southern genotypes of the North American tick *Ixodes scapularis* (Acari: Ixodidae) under northern and southern conditions. *Parasites & Vectors* 7**:**394. (collaborative)

Glassberg, D. 2017. Reflections on the past, present, and future of civic engagement in National Parks. *In:* S. Weber, ed. 2017. *Connections Across People, Place, and Time: Proceedings of the 2017 George Wright Society Conference on Parks, Protected Areas, and Cultural Sites*. Hancock, MI. http://www.georgewright.org/gws2017_proceedings.pdf (76)

Gobler, C., H. Clark, A. Griffith, M. Lusty. 2016. Diurnal fluctuations in acidification and hypoxia reduce the growth and survival of larval and juvenile bay scallops (*Argopecten irradians*) and hard clams (*Mercenaria mercenaria*). *Frontiers in Marine Science* 3: 282. https://www.somas.stonybrook.edu/?s=clark) (61)

Hattenrath-Lehmann, T., C. Gobler. 2017. Identification of unique microbiomes associated with harmful algal blooms caused by *Alexandrium fundyense* and *Dinophysis acuminata*. *Harmful Algae* 68: 17-30. https://www.somas.stonybrook.edu/?s=Gobler (61)

Hauser, S., M. Meixler, M. Laba. 2015. Quantification of impacts and ecosystem services loss in New Jersey coastal wetlands due to Hurricane Sandy storm surge. *Wetlands* 35(6): 1137-1148. http://www.rci.rutgers.edu/~meixler/pubs.html) (26)

Hill, M. In Review, expected 2019. *Native Peoples and National Parks*: Edited Volume in preparation for Public Land series at University of Oklahoma Press. (79)

Houser, J., H. Ginsberg, E. Jakob. 2014. Competition between introduced and native spiders (Araneae: Linyphiidae). Biological Invasions 16:2479-2488. (collaborative)

Houser, J., A. Porter, H. Ginsberg, E. Jakob. 2016. The effect of phenology on agonistic competitive interactions between invasive and native sheet-web spiders. *Canadian Journal of Zoology* 94: 427-434. (collaborative)

Hychka, K, C. Druschke, J. Remillard. (In Review). Minding the gap: Analysis of arguments made in the media for and against closing the breach on Fire Island National Seashore. (88, 92,102)

*Jackson, L., B. Furman, B. Peterson. 2017. Morphological response of *Zostera marina* reproductive shoots to fertilized porewater. *Journal of Experimental Marine Biology and Ecology* 489:1-6. (68)

James-Pirri, M.-J., J. Swanson, C. Roman, H. Ginsberg, J. Heltshe. 2014. Case Study Chapter: Ecological thresholds for salt marsh nekton and vegetation communities. *In*: G.R. Guntenspergen (ed.) *Application of Threshold Concepts in Natural Resource Decision Making*. Springer, NY. ISBN 978-1-4899-8040-3. DOI 10.1007/978-1-4899-8041-0_14

*Kang, X., M. Xia J. Pitula, P. Chigbu. 2017. Dynamics of water and salt exchange at Maryland Coastal Bays. *Estuarine, Coastal and Shelf Science* 189:1-16. (74)

Meixler, M. 2017. Assessment of Hurricane Sandy damage and resulting loss in ecosystem services in a coastal-urban setting. *Ecosystem Services* 24: 28-46. DOI: 10.1016/j.ecoser.2016.12.009 http://www.rci.rutgers.edu/~meixler/pubs.html) (26)

Nagel, J., H. Neckles, G. Guntenspergen, E. Rocks, D. Jr., J. Grace, D. Skidds, S. Stevens. 2018. Development of a multimetric index for integrated assessment of salt marsh ecosystem condition. *Estuaries and Coasts* 41(2):334-338. (collaborative)

Nelson, P., B. McCune, C. Roland, S. Stehn. In Review. Nonparametric methods reveal nonlinear functional trait variation in lichens along environmental and fire age gradients. *Journal of Vegetation Science*. (73)

Nordstrom, K., N. Jackson, C. Roman. 2016. Facilitating landform migration by removing shore protection structures: opportunities and constraints. *Environmental Science and Policy* 66: 217-226.

*Novak, J., S. Becker, J. Finn, A. Danylchuk, C. Pollock, Z. Hillis-Starr, A. Jordaan. In Review. Defining residency and using network analysis to explore the broad-scale movement ecology of horse eye jack *Caranx latus* within a Caribbean Marine Protected Area. (72)

Psuty, N., K. Ames, A. Habeck, W. Schmelz. 2018. Responding to coastal change: Creation of a regional approach to monitoring and management, northeastern region, U.S.A. *Ocean and Coastal Management* 156: 170-182. (28)

Psuty, N, W. Schmelz, A. Spahn, J. Greenberg. 2016. Geotemporal vectors of coastal geomorphological change interacting with National Park Service management policy at Great Kills Park, Gateway National Recreation Area, USA. *Geomorphology* 252(1): 5-16. http://dx.doi.org/10.1016/j.geomorph.2015.05.023 (20)

Renfro, A., J. Cochran, D. Hirschberg, H. Bokuniewicz, S. Goodbred. 2016. The sediment budget of an urban coastal lagoon (Jamaica Bay, NY) determined using 234Th and 210Pb. *Estuarine, Coastal and Shelf Science* 180: 136-149. (58)

Rulison, E., K. Kerr, M. Dyer, S. Han, R. Burke, J. Tsao, H. Ginsberg. 2014. Minimal role of eastern fence lizards in *Borrelia burgdorferi* transmission in central New Jersey oak/pine woodlands. *Journal of Parasitology* 100:578-582. (collaborative).

Rulison, E., R. LeBrun, H. Ginsberg. 2014. Effect of temperature on feeding period of larval blacklegged ticks (Acari: Ixodidae) on eastern fence lizards. *Journal of Medical Entomology* 51:1308-1311. (collaborative)

Scott, Z, H. Ginsberg, S. Alm. 2016. Native bee diversity and pollen foraging specificity in cultivated highbush blueberry (Ericaceae: *Vaccinium corymbosum*) in Rhode Island. *Environmental Entomology* 45 (6):1432-1438. (collaborative)

*Stubler, A., L. Jackson, B. Furman, B. Peterson. 2017. Seed production patterns in *Zostera marina*: Effect of patch size and landscape configuration. *Estuaries and Coasts* 40: 564-572. (68)

*Tamborski, J., J. Cochran, C. Heilbrun, P. Rafferty, P. Fitzgerald, Q. Zhu, C. Salazar. 2017. Investigation of pore water residence times and drainage velocities in salt marshes using short-lived radium isotopes. *Marine Chemistry* 196: 107-115. https://www.sciencedirect.com/science/article/pii/S0304420317300464?via%3Dihub (58)

*Tinoco, A., S. Heck, B. Furman, L. Jackson, B. Peterson. In Review. Effects of a barrier island breach on the distribution and community composition of seagrass-associated nekton communities. *Estuaries and Coasts.* (68)

Urban, T., D. Bustos, S. Manning. M. Bennett. 2018. Use of magnetometry for detecting and documenting multi-species Pleistocene megafauna tracks. *Quaternary Science Reviews* 199: 206 – 213. (11)

Watkins, T., A. Miller-Rushing, S. Nelson. 2018. Science in Places of Grandeur: Communication and Engagement in National Parks. *Integrative and Comparative Biology* 58(1): 67–76. (71)

Wigand, C., C. Roman, E. Davey, M. Stolt, R. Johnson, A. Hanson, E. Watson, S. Moran, D.R. Cahoon, J. Lynch, P. Rafferty. 2014. Below the disappearing marshes of an urban estuary: Historic nitrogen trends and soil structure. *Ecological Applications* 24: 633-649. (collaborative)

Technical Reports *(* indicates the lead author was a student) (43)*

Auwaerter, J., C. Anderson, C. Ponte, N. Powers, P. Selby. 2017. Cultural landscape report for Gettysburg National Cemetery. Boston: National Park Service Olmsted Center for Landscape Preservation, LCC E475.56.A93 2017. 446 pages. (44)

Bassuk, N., B. Denig, B. Neal, Y. Harada. 2018. The state of the elms on the National Mall, Washington, DC. Report prepared for the National Park Service. DOI: 10.13140/RG.2.2.21315.91680 http://www.hort.cornell.edu/uhi/research/articles/National%20Mall%20Elms_2018.04.07.pdf (10)

Cochran, J., Q. Zhu, C. Heilbrun, J. Tamborski, H. Yin, P. Fitzgerald, J. Perez-Tuero, H. Feng. 2018. Health and resilience of salt marshes in Jamaica Bay, NY: Geochemical and dynamical perspectives. Natural Resource Report NPS/NCBN/NRR—2018/1643. National Park Service, Fort Collins, CO. https://irma.nps.gov/DataStore/DownloadFile/608831 (58)

DeSorbo, C., A. Gilbert, C. Persico, W. Hanson. 2018. Pilot GPS telemetry study: Evaluating bald eagle movements relative to the Naval and Telecommunications Area Master Station,

Atlantic Detachment Cutler, Cutler Maine. BRI Report # 2017-22 Unpublished Technical Report submitted to NAVFAC PWD-ME, Portsmouth, NH and Tetra Tech, Portland, ME. (106)

Gobler C., J. Thickman. 2016. Response of indicator bacteria in Great South Bay, Long Island to the breach at Old Inlet: An analysis of coliform bacteria post Hurricane Sandy. Natural Resource Report. NPS/NER/NRR—2016/1261. National Park Service. Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2230810 (61)

Gobler C., A. Stevens. 2017. Assessing the response of juvenile and adult hard clams to the new breach in Great South Bay: Post-Hurricane Sandy study. Natural Resource Report. NPS/NCBN/NRR—2017/1505. National Park Service. Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2243780 (64)

Gobler, C., C. Young, J. Goleski, R. Wallace, F. Koch, T. Hattenrath-Lehmann, M. Lusty, J. Thickman, K. Langlois, Y. Litvinenko, J. Collier, D. Lonsdale. 2018. Assessing the response of the Great South Bay plankton community to Hurricane Sandy. Natural Resource Report NPS/NCBN/NRR—2018/1781. National Park Service, Fort Collins, CO. https://irma.nps.gov/DataStore/DownloadFile/608884 (62)

Hill, M., J. Parmenter. In Review. Treaties and the problem of Empire: An ethnographic study of the Colonial Treaties of Fort Stanwix and their historical legacies. National Park Service, Fort Stanwix National Monument. (79)

James, M.-J. In Review. Restoration of the turning basin and tidal wetlands at Saugus Iron Works National Historic Site. Final Report for 2004-2016 monitoring. Natural Resource Report NPS/SAIR/NRR-XXXX-XXX. National Park Service. Fort Collins, CO. (94)

James, M.-J. 2016. Hopewell Furnace National Historic Site Natural Resource Condition Assessment, Pennsylvania. Natural Resource Report NPS/HOFU/NRR-2016/1153. National Park Service. Fort Collins, CO.

James, M.-J. 2017. Gettysburg National Military Park and Eisenhower National Historical Site Natural Resource Condition Assessment, Pennsylvania. National Park Service, Natural Resource Report NPS/NER/NRR-2017/1369. National Park Service. Fort Collins, CO.

James M.-J. 2015. Restoration of the turning basin and tidal wetlands at Saugus Iron Works National Historic Site: Summary data report for 2004 to 2014 monitoring. Natural Resource Report. NPS/SAIR/NRR—2015/1012. National Park Service. Fort Collins, CO. (94)

Keenan, P., K. Regan. 2017 Monitoring avian productivity and survivorship (MAPS) surveys at NCTAMSLANT DET Cutler, ME. Unpublished Technical Report submitted to Ian Trefry, Natural Resource Manager, NAVFAC PWD-ME, Portsmouth Naval Shipyard, Portsmouth, NH. (106)

Neil, A., A. Babson. 2015. Database of tidal data coverage in and near Northeast Region National Parks. Natural Resource Data Series NPS/NER/NRDS—2015/759. National Park Service, Fort Collins, CO. https://irma.nps.gov/DataStore/DownloadFile/519343 (collaborative)

Neil, A., S. Rasmussen, M. Bradley. 2017. On-the-ground collection of high resolution elevation data in salt marsh environments: A Northeast Coastal and Barrier Network methods document. Natural Resource Data Series. NPS/NCBN/NRR—2017/1370. National Park Service. Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2237865 (90)

Psuty, N., I. Beal, W. Schmelz, A. Spahn. 2018. Development of a geomorphological map of Assateague Island National Seashore: Principal characteristics and components. Natural Resource Report NPS/NRSS/GRD/NRR – 2018/1592. National Park Service. Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2251644 (20)

Psuty, N., W. Hudacek, W. Schmelz, and A. Spahn. 2016. Development of the geomorphological map for Governors Island, Ellis Island, and Liberty Island, Upper New York Bay: Principal characteristics and components. Natural Resource Report NPS/NRSS/GRD/NRR—2016/1346. National Park Service, Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2237318 (20)

Psuty, N., J. McDermott, W. Hudacek, J. Gagnon, M. Towle, W. Robertson, A. Spahn, M. Patel, and W. Schmelz. 2016. Development of the geomorphological map for Sagamore Hill National Historic Site: Principal characteristics and components. Natural Resource Report NPS/NRSS/GRD/NRR—2016/1348. National Park Service, Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2237319 (20)

Psuty, N., M. Patel, J. Freeman, W. Schmelz, W. Robertson, A. Spahn. 2015 Development of the geomorphological map for Fire Island National Seashore: Principal characteristics and components. Natural Resource Report NPS/NRPC/GRD/NRR-2015/941. National Park Service, Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2221405 (20)

Psuty, N., W. Schmelz, A. Spahn, 2015. Northeast Coastal Barrier Network shoreline position (1D) and coastal topographic (2D) change monitoring: 2013-2014 summary report for Gateway National Recreation. Natural Resource Data Series. National Park Service, Ft. Collins, CO. (20)

Psuty, N., W. Schmelz, A. Spahn, 2015. Tracking change in shoreline position (1D) and coastal profiles (2D), Gateway National Recreation Area: Monitoring report for 2012-2013. Natural Resource Technical Report. National Park Service, Fort Collins, CO. (20)

Regan, K., D. Meattey. 2017. High-elevation bird survey at Survival, Evasion, Resistance, & Escape (SERE) School, Redington, Maine. BRI Report # 2018-11. Unpublished Technical Report submitted to Ian Trefry, Natural Resource Manager, NAVFAC PWD-ME, Portsmouth Naval Shipyard, Portsmouth, NH. (106)

Regan, K., D. Meattey. 2017. Report of piping plover and roseate tern surveys at the Naval and Telecommunications Area Master Station, Atlantic Detachment Cutler, Cutler Maine. BRI Report # 2018-10. Unpublished Technical Report submitted to Ian Trefry, Natural Resource Manager, NAVFAC PWD-ME, Portsmouth Naval Shipyard, Portsmouth, NH. (106)

Ricci, G., D. Robadue, Jr., A. Babson. 2017. Designing and scoping climate change vulnerability assessments for coastal national parks in the northeast region: Guidance and lessons learned. Natural Resource Report NPS/NER/NRR—2017/1426. National Park Service, Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2240053 (103, collaborative)

Ricci, G., D. Robadue, Jr., P. Rubinoff, A. Casey, A. Babson. In Review. Colonial National Historical Park integrated coastal climate change vulnerability assessment: A pilot method. Natural Resources Report NPS/NER/NRR–-XXX. National Park Service, Fort Collins, CO. (103, collaborative)

Ricci, G., D. Robadue, Jr., P. Rubinoff, A. Casey, A. Babson. In Review. Method for integrated coastal climate change vulnerability assessment. Natural Resources Report NPS/NER/NRR–-XXX. National Park Service, Fort Collins, CO. (103, collaborative)

Rothwell, A, H. Ginsberg. 2018. Bee fauna of Napatree Point Conservation Area: 2017 sampling. *In* J.M. Sassi (ed.) *The State of Napatree Report: 2017*. pp. 167-173.

http://www.edc.uri.edu/PERSONAL/PETE/napatree/son2017_final/21.Rothwell&Ginsberg_FINAL.pdf) (collaborative)

Sanderson, E., W. Solecki, J. Waldman, A. Parris (editors). 2016. *Prospects for Resilience. Insights from New York City's Jamaica Bay*. Island Press. ISBN: 9781610917322 (7)

Tefft E. 2015. Creating useful products from USGS topographic maps: GIS workflows developed in response to Hurricane Sandy data processing needs. Natural Resource Report. NPS/NCBN/NRR—2015/958. National Park Service. Fort Collins, CO. (includes link to GISscripts) https://irma.nps.gov/DataStore/Reference/Profile/2221960 (88)

Tefft E. 2015. Processing imagery with mosaic datasets to create functional outputs: GIS workflows developed in response to Hurricane Sandy data processing needs. Natural Resource Report. NPS/NCBN/NRR—2015/960. National Park Service. Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2221963 (88)

Tefft E. 2015. Working with elevation data to produce high-quality results: GIS workflows developed in response to Hurricane Sandy data processing needs. Natural Resource Report. NPS/NCBN/NRR—2015/959. National Park Service. Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2221961 (88)

Tierney G., J. Gibbs. 2016. Marsh-Billings-Rockefeller National Historical Park Natural Resource Condition Assessment: October 2016 update. Natural Resource Report. NPS/NERO/NRR—2016/1320. National Park Service. Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2236153

Tierney G., J. Gibbs. 2016. Natural Resource Condition Assessment: Weir Farm National Historic Site. Natural Resource Report. NPS/NETN/NRR—2016/1256. National Park Service. Fort Collins, CO. (56)

Tierney, G., J. Gibbs. 2018. Natural Resource Condition Assessment: Saint-Gaudens National Historic Site. Natural Resource Report NPS/SAGA/NRR—2018/1730. National Park Service, Fort Collins, CO. (52)

*Tinoco, A, B. Peterson. 2017. Effects of Hurricane Sandy on Fire Island National Seashore (NY): Assessing seagrass-associated nekton communities. National Park Service, Natural Resource Report, NPS/NCBN/NRR-2017/1468. National Park Service, Fort Collins, CO. (68)

*Tinoco, A., B. Peterson. 2017. Effects of Hurricane Sandy on Fire Island National Seashore (NY): Assessing water quality and seagrass. National Park Service, Natural Resource Report, NPS/NCBN/NRR-2017/1467. National Park Service, Fort Collins, CO. (68)

Ullman D., 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, CO. https://irma.nps.gov/DataStore/Reference/Profile/2240758 (88, collaborative)

Ullman, D., A. Babson, M. Bradley. 2016. Evaluating VDatum in coastal National Parks: Fire Island National Seashore, Gateway National Recreation Area, and Assateague Island National Seashore. Natural Resource Report NPS/NCBN/NRR—2016/1148. National Park Service, Fort Collins, CO. https://irma.nps.gov/DataStore/Reference/Profile/2227750 (collaborative)

VanderMeulen, D., S. Nelson, A. Klemmer, C. Eagles-Smith, J. Willacker. 2018. Quality assurance plan for monitoring mercury in dragonfly larvae and fish. Natural Resource Report NPS/GLKN/NRR—2018/1697. National Park Service, Fort Collins, CO. (71)

VanderMeulen, D., B. Route, J. Wiener, R. Haro, K. Rolfhus, M. Sandheinrich, S. Nelson, A. Klemmer, C. Eagles-Smith, J. Willacker. 2018. Protocol for monitoring mercury in dragonfly larvae and fish (version 1.0): Great Lakes Inventory and Monitoring Network. Natural Resource Report NPS/NCCN/NRR—2018/1726. National Park Service, Fort Collins, CO. (71).

Venti, N.L., C. Ver Straeten, S. Osgood, A. DiTroia. 2017. Evaluation of John Boyd Thacher State Park, Albany County, NY: For its merit in meeting national significance criteria as a National Natural Landmark. Final Report prepared for the National Park Service by the Massachusetts Geological Survey, 130p. (82)

Venti, N.L., M. McCreight, J. Jurnack. 2018. Spectacular geology of the Northeast: High-priority sites for evaluation as National Natural Landmarks in the Appalachian Ranges and Plateaus, Adirondacks and New England. Gap analysis prepared for the National Park Service by the Massachusetts Geological Survey, 20p. (82)

Yates, D., C. Byrne, J. Bonta. 2017. Bat survey at Marsh-Billings-Rockefeller NHP in Woodstock, VT and Saint-Gaudens NHS in Cornish, NH 2017. Report submitted to National Park Service-Marsh-Billings Rockefeller and Saint-Gaudens. Biodiversity Research Institute, Portland, ME. (3)

Professional Presentations (at professional meetings, conferences, workshops, symposia, etc.)
** indicates the lead author was a student. If known, the type of presentation is indicated e.g., oral, poster) (234 Presentations)*

Adams, M., G. Giese, M. Tyrrell, S. Fox, T. Smith, S. Smith, K. Medeiros. Using science to respond and communicate coastal change: from measured, to collaborative, to opportunistic. The George Wright Society Biennial Conference on Parks, Protected Areas, and Cultural Sites, Oakland, CA. March 29-April 3, 2015. (collaborative)

*Alexander, D., A. Lamb, B. Branco. A spatial and temporal analysis of water quality in Jamaica Bay: Detecting changes and establishing zones of similar influence. 2016 State of the Bay, Science and Resilience Institute, Jamaica Bay, New York City. June 15-16, 2016. (poster presentation) (4)

*Althouse, M., J. Cohen. Effects of disturbance on staging roseate terns (*Sterna dougallii*) in the Cape Cod National Seashore. 2014 ROST Recovery Workgroup Annual Meeting, Hadley, MA. November 2014. (47)

*Althouse, M., J. Cohen. Effects of disturbance on staging roseate terns (*Sterna dougallii*) in the Cape Cod National Seashore. The 38th annual meeting of The Waterbird Society and the 13th Congress for the Study and Conservation of the Birds in Mexico (CECAM), La Paz, Baja California Sur, Mexico. November 4-8, 2014. (47)

*Althouse, M., J. Cohen. Tourism and Terns: Effects of disturbance on staging roseate terns. Onondaga Audubon Society Meeting. Onondaga Free Library, Onondaga, NY. April 2015. (47)

*Althouse, M., J. Cohen. The importance of the Cape Cod National Seashore to the federally endangered roseate tern. Science in the Seashore Annual Symposium. Eastham, MA. August 2015. (47)

*Althouse, M., J. Cohen. Effects of disturbance on staging roseate terns (*Sterna dougallii*) in the Cape Cod National Seashore. 71st Annual Northeast Fish and Wildlife Conference, Newport, RI. April 19-21, 2015. (47)

*Althouse, M., J. Cohen, J. Spendelow, S. Karpanty, K. Davis, K. Parsons, C. Luttazi. Quantifying the effects of disturbance on staging roseate terns (*Sterna dougallii*) on the Cape Cod National Seashore. 39th annual meeting of The Waterbird Society. Bar Harbor, ME. August 11-15, 2015. (oral presentation) (47)

*Althouse, A., J. Cohen, J. Spendelow, S. Karpanty, K. Davis, K. Parsons, C. Luttazi. Quantifying significant distances to minimize disturbance effects. 72nd Annual Northeast Fish and Wildlife Conference. Annapolis, MD. April 3-5, 2016. (oral presentation) (47)

*Althouse M., J. Cohen, J. Spendelow, S. Karpanty, K. Davis, K. Parsons, C. Luttazi. Evaluating anthropogenic disturbances to minimize effects on staging seabirds. 6th North American Ornithological Conference. Washington, DC. August 16-20, 2016. (oral presentation) (47)

*Althouse, M., J. Cohen, J. Spendelow, S. Karpanty, K. Davis, K. Parsons, C. Luttazi. How does recreational disturbance affect activity budgets of staging terns in Cape Cod, Massachusetts? American Ornithology Society and Society of Canadian Ornithologists Meeting. East Lansing, MI. July 31-August 5, 2017. (oral presentation) (47)

*Ames, K., N. Psuty, A. Habeck. Metrics of coastal resilience and recovery at Fort Tilden, Gateway National Recreation Area, Post-Hurricane Sandy. Geological Society of America, Southeastern Section, Richmond, VA, March 29-31, 2017. (oral presentation) (28)

*Ames, K., J. Greenberg, W.J. Schmelz, A. Spahn, N. Psuty. Metrics of storm impacts and recovery in Fort Tilden, Jamaica Bay Unit, Gateway National Recreation Area. The Geological Society of America Northeastern Section 51st Annual Meeting 2016, Albany, NY. March 21-23, 2016. (poster presentation) (20)

Auwaerter, J. Workshop to address issues related to Route 3 through Chancellorsville Battlefield. Fredericksburg and Spotsylvania National Military Park, Fredericksburg, VA. November 8, 2015. (36)

Auwaerter, J. Workshop with staff of Gettysburg National Military Park to develop future vision for the cemetery landscape, Gettysburg, PA. January 20, 2016. (44)

Babson, A., M. Caffrey, M. Bradley. Comparing sea level rise and storm surge modeling methods, George Wright Society Conference on Parks, Protected Areas, and Cultural Sites, Oakland, CA. March 29-April 3, 2015. (oral presentation) (collaborative)

Babson, A. L., A. Neil, D. Ullman, Making the most of existing tide data to support climate adaptation decision making. New England Estuarine Research Society, Salem, MA. May 1-3, 2014. (collaborative)

Babson, A., G. Ricci, D. Robadue. Determining Fire Island National Seashore vulnerable natural/cultural resources and facilities for prioritizing and adapting in an uncertain world of climate change. 11th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 27-28, 2018 (oral presentation) (collaborative)

Bassuk, N, B. Denig, B. Neal. Report on the National Mall elms to the National Park Service in Washington DC. June, 11, 2018. (oral presentation) (10)

*Beal, I., W. Schmelz, J. Greenberg, A. Shahn, N. Psuty. Barrier island geomorphological evolution: interaction among sediment budget and extreme events. Northeastern Regional Meeting, Geological Society of America, Bretton Woods, NH. March 23-25, 2015. (poster presentation) (30)

*Beal, I., W. J. Schmelz, A. Spahn, J. Greenberg, N. P. Psuty. Geotemporal values of coastal geomorphological maps. George Wright Society Biennial Meeting, Oakland, CA. March 29-April 3, 2015. (poster presentation) (20)

Beati, L., T. de Meeûs, C. Chan, J. Ludwig, R. Burke, H. Ginsberg, N. Ogden, J. Tsao, and the Lyme Gradient Consortium. What can microsatellite markers tell us about population genetics of *Ixodes scapularis* Say, 1821. International Conference on Lyme Borreliosis, Centers for Disease Control and Prevention (CDC), Atlanta, GA. September 11-14, 2018 (poster presentation) (collaborative)

*Becker, S. J. Finn, A. Danylchuk, A. Jordaan. Abundance and home range of great barracuda *Sphyraena barracuda* inhabiting coastal waters in the Northern Caribbean. American Fisheries Society Annual Meeting, Portland, OR. August 14-21, 2015. (oral presentation) (72)

*Becker, S. J. Finn, A. Danylchuk, A. Jordaan. Movement patterns and site fidelity of great barracuda (*Syphraena barracuda*) around two Caribbean islands. American Fisheries Society Annual Meeting. Quebec, Canada. August 18-21, 2014. (poster presentation) (72)

Borrelli, M., C. Kennedy, T. Smith, K. Malakhoff, E. Shumchenia. Benthic habitat mapping in response to Hurricane Sandy: Cape Cod National Seashore, Massachusetts. 2015 Coastal Estuarine Research Federation (CERF). Portland, OR. November 8-12, 2015. (oral presentation) (15)

Borrelli, M., C. Kennedy, T. Smith, E. Shumchenia, J. Kelly. Creating benthic habitat maps in a U.S. National Park using a phase-measuring sidescan soar. International conference on Marine Geological and Biological Habitat Mapping: GEOHAB 2016. Winchester, England. May 2-6, 2016. (oral presentation) (15)

Borrelli, M., B. Legare, T. Smith, H. Love. Mapping the estuarine seafloor with vessel based acoustic instruments: the shallowest water survey. Geological Society of America Annual Meeting, Denver, CO. Sept 25-28, 2016. (oral presentation) (15)

Borrelli, M., T. Smith. Vessel-based acoustical mapping of intertidal zone in microtidal and mesotidal environments: Increasing efficiencies and reducing uncertainties with phase-measuring sidescan sonars. The Geological Society of America Northeastern Section 51st Annual Meeting 2016, Albany, NY. March 21-23, 2016. (oral presentation) (15)

Borrelli, M., T. Smith, B. Oakley, G. Giese. Understanding coastal and glacial processes through multi-scale, multi-sensor data visualization: discovery, hypothesis development and testing. Geological Society of America, Bretton Woods, NH. March 23-25, 2015. (oral presentation) (15)

Bradley, M. S. Rasmussen, A. Neil, J. Raphael, S. Stevens. Precision elevation mapping at critical park areas at Fire Island National Seashore. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (oral presentation) (90, collaborative)

Bradley, M, A. Mandeville, N. Vinhateiro, L. McStay. Inundation modeling of buildings for National Parks in the Northeast U.S. using SLOSH and on the ground survey data. Coastal GeoTools, Charleston, NC. February 6-9, 2017. (oral presentation) (88)

Bradley, M., A. Neil, C. LaBash, P. August. Assessing inundation risk and storm surge at Fire Island National Seashore using high accuracy geodetic control. Fire Island National Seashore 9th Biennial Science Conference. Patchogue, NY. March 28-29, 2014. (poster presentation) (90)

Bradley, M, N. Vinhateiro, L. McStay, A. Babson, M. Christiano, A. Mandeville, S. Stevens. Vulnerability assessment of National Park Service infrastructure to storm surge and sea level change. 14th Estuarine and Coastal Modeling Conference (ECM14), University of Rhode Island, Kingston, June 13-15, 2016. URL: http://ecm.github.io/ECM14/ECM14_abstracts.html (oral presentation) (88, collaborative)

Branco, B. Before the storm: The rush to resilience. New England Estuarine Research Society Fall 2014 Meeting. Groton, CT. October 16-18, 2014. (oral presentation) (4)

Branco, B.F. Conducted beta-testing workshop at the Brooklyn College Graduate Center for Worker Education, Manhattan, NY. April 28, 2016. (4)

Branco, B. Water quality monitoring in Jamaica Bay: Past, present and future. Urban resilience in an era of climate change. Global Input for Local Solutions Symposium at Kingsborough College, Brooklyn, NY. October 17-18, 2013. (oral presentation). http://www.sackscom.com/urban-resilience-program-book.pdf (4)

Branco, B., S. Baptista, P. Sullivan. M. Ringenary, B. Ranheim. Detecting water quality regime shifts in Jamaica Bay. Symposium on Ecosystem Resilience Research in Jamaica Bay. City University of New York Graduate Center, New York, NY. November 15, 2015. (oral presentation) (4)

Burdick, D., C. Roman. Tidal restoration: an essential tool for salt marsh restoration in New England. New England Estuarine Research Society. Salem, MA. May 1-3, 2014. (collaborative)

*Campbell, A., Y. Wang. High spatial resolution remote sensing for mapping and monitoring of salt marshes in Jamaica Bay, New York. American Association of Geographers (AAG). Boston, MA. April 5th - 9th, 2017 (oral presentation) (105)

*Campbell, A.D., Y. Wang. High spatial resolution remote sensing for mapping and monitoring of salt marshes in Jamaica Bay, New York. American Association of Geographers (AAG), Boston, MA. April 5-9, 2017. (oral presentation) (105)

*Campbell, A., Y. Wang. Integrating tidal effects in high spatial resolution salt marsh mapping with Topo-Bathymetric LiDAR. American Society of Photogrammetry and Remote Sensing (ASPRS). Baltimore, MD. March 12–16, 2017 (oral presentation) (105)

*Campbell, A., Y. Wang. Object-based classifications of an urban estuary: Pre and post natural disturbance. American Society for Photogrammetry & Remote Sensing, Fort Worth, TX. April 11-16, 2016. (oral presentation) (105)

*Campbell, A., G. Bonynge, R. Duhaime, A. Mandeville, E. Tefft, C. LaBash, S. Stevens, D. Skidds, M. Christiano, N. Winn, P. August. Illustrating coastal change with mean high water shorelines derived from LiDAR. ESRI International User Conference, San Diego, CA. July 14-18, 2014. (poster presentation) (88, collaborative)

*Campbell, A., G. Bonynge, R. Duhaime, A. Mandeville, E. Tefft C. LaBash, S. Stevens, D. Skidds, M. Cristiano, P August. LiDAR-derived post-storm beach volume change analysis. 2014 Northeast Arc Users Group (NEARC) annual conference, Groton, CT. October 5-8, 2014. (poster presentation) (88, collaborative)

*Carrillo, A. Inland migration of coastal plant species in Jamaica Bay. Aresty Research Center for Undergraduates 2016 Summer Science Student Abstracts, Rutgers University, NJ. https://aresty.rutgers.edu/sites/default/files/pdf/aresty/2016_ss_abstracts_pdf3.pdf (26)

Casey, A., D. Geyer, A. Babson, G. Ricci, D. Robadue, J. Kendrick, P. Rubinoff. Piloting an integrated vulnerability assessment at Colonial National Historical Park Across Key Resources and Infrastructure. George Wright Society Conference, Norfolk, VA. April 2-7, 2017. (collaborative)

*Chin, D., B. Furman, A. Stubler, B. Peterson. Succession and the microbe-macroinvertebrate community in small seagrass patches. Poster presentation at the 43rd Benthic Ecology Meeting, Jacksonville, FL. March 19-22, 2014. (poster presentation) (68)

*Chin, D., B. Peterson. Investigating a potential mutualism between *Solemya velum* and *Zostera marina* mediated by symbiotic sulfide –oxidizing bacteria. 44th Benthic Ecology Meeting, Quebec City, Canada. March 4-7, 2015. (66, 68)

Cochran, J., Q. Zhu. Health and resiliency of salt marshes in Jamaica Bay. Symposium on ecosystem resilience research in Jamaica Bay. City University of New York Graduate Center, New York, NY. November 15, 2015. (oral presentation) (58)

Connally, N., T. Mather, H. Ginsberg, R. Krell, S. Engborg, A. Hojgaard, A. Hinckley, L. Eisen. The Backyard Integrated Tick Management (BITM) Study: Understanding and reducing peridomestic risk for tickborne disease. International Conference on Lyme Borreliosis, Centers for Disease Control and Prevention (CDC), Atlanta, GA. September 11-14, 2018 (poster presentation) (collaborative)

Couret, J., J. Tsao, S. Han, M. Dyer, J. Stallworth, T. Mather, H. Ginsberg. Effect of infection status with *Borrelia burgdorferi* on rate of engorgement and survival of larval *Ixodes scapularis*. International Conference on Lyme Borreliosis, Centers for Disease Control and Prevention (CDC), Atlanta, GA. September 11-14, 2018 (poster presentation) (collaborative)

*Curry, B. Presentation (title unknown), Northeast Bat Working Group Annual Meeting, Baltimore, MD. January 11-13, 2016. (49)

*Curry, B. Conserving Bats in the Northeast. Onondaga Audubon Society Meeting, DeWitt Community Library, Dewitt, NY. 2015. (48, 49, 50)

*Curtin, J., K. House, R. Thiet, M.J. James, K. Medeiros. 2016 and 2017. Population structure and spawning habits of the American horseshoe crab (*Limulus polyphemus*) in East Harbor, MA, after partial tidal restoration. Northeast Ecosystem Research Cooperative, Saratoga Springs, NY. March 28-29, 2017 (poster presentation) (collaborative)

*Dean, S. Reptiles and amphibians of New York, Onondaga County Audubon Society, Syracuse, NY. February 10, 2016. (53)

*Dean, S., J. Gibbs, B. Underwood. Influence of habitat edges and recreational trails on the distribution and abundance of amphibians in an urban protected area. Joint Meeting of Ichthyologists and Herpetologists, Austin, TX. July 2017 (53)

DeLuca, M.P. Advanced technologies and benthic habitat workshop. Teachers on the Estuary (TOTE) Flyer. Jacques Cousteau National Estuarine Research Reserve. Tuckerton, NJ. August 9-12, 2016 (22, 23)

DeLuca, M., N. Psuty, J. Greenberg. Monitoring and evaluation of restoration and resilience: Dune-beach geomorphology, Jamaica Bay Unit, Gateway National Recreation Area. Symposium on Ecosystem Resilience Research in Jamaica Bay. City University of New York Graduate Center, New York, NY. November 15, 2015. (oral presentation) (30)

DeSorbo, C., D. Hengstenberg, A. Gilbert, C. Persico, W. Hanson, I. Trefry. 2018. Evaluating bald eagle movements relative to the Naval and Telecommunications Area Master Station, Atlantic Detachment Cutler, Cutler Maine. 83rd Annual National Military Fish and Wildlife Association Conference, Department of Defense Natural Resources Training Workshop. Norfolk, VA. March 25-30, 2018. (poster presentation) (106)

Druschke, C. A rhetorical model for developing graduate science writers. Association for the Teachers of Technical Writing (ATTW), Houston, TX. April 6, 2016. (88)

Duhaime, R. Preparing LiDAR data for ArcGIS using the Point Data Abstraction Library (PDAL). Northeast Arc Users Group Meeting, Burlington, VT. November 9, 2015 (oral presentation) (91)

Flagg, C. The development of the Old Inlet Breach and its impacts on Great South Bay. Long Island. Natural History Survey Conference. Brookhaven National Laboratory, Upton, NY. December 6, 2013 (59)

Flagg, C. New "old" Inlet Breach. Wertheim Pine Barrens Discovery Day, Wertheim National Wildlife Refuge, Shirley, NY. May 31, 2014. (oral presentation) (59)

Flagg, C., R. Flood. The opening of the breach in Fire Island and its impact on Great South Bay. Fire Island National Seashore 9th Fire Island National Seashore Biennial Science Conference. Patchogue, NY. March 28, 2014. (oral presentation) (59)

Flagg, C., C. Hinrichs, R. Flood, R. Wilson. Developments at the Old Inlet Breach and Great South Bay during 2015. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (oral presentation) (59)

Flagg, C., Flood, R. Wilson, D. Yang. Great South Bay and the breach in Fire Island, MY. Ocean Science Meeting. Honolulu, HI. February 23-28, 2014. (poster presentation) (59)

*Fletcher, J. Characterizing habitat use and species composition of bats in Cape Cod National Seashore. Northeast Bat Working Group Annual Meeting, Baltimore, MD. January 11-13, 2016. (49)

*Fletcher, J. Habitat use and species composition of bats in a northeastern coastal plain ecosystem. Annual Conference of North American Society for Bat Research. San Antonio, TX. 2016. (oral presentation) (48, 49, 50).

*Fletcher, J., C. Marroquin. Investigating bats at Cape Cod National Seashore to understand bat species assemblages and habitat use. Science in the Seashore Annual Symposium. Eastham, MA. August 2015. (49)

Flood, R., C. Flagg, J. Goff, J. Austin, W. Schwab, J. Denny, B. Christensen, C. Brown, S. Saustrup. Evolution and impacts of a new inlet formed in Fire Island National Park by Superstorm Sandy. 2013 American Geophysical Union Fall Meeting. San Francisco, CA. December 9-13, 2013. (Invited speaker) (59)

*Floros, N., Kulp, R., B. Peterson. Investigating how habitat density can alter intraspecific competition in mesopredators. 44th Benthic Ecology Meeting, Quebec City, Canada. March 4-7, 2015. (poster presentation) (66, 68)

*Furman, B., L. Jackson, E. Bricker, M. Waycott, B. Peterson. The interactive effects of pollination and seed dispersal distance on the dynamics of sexual recruitment in an establishment phase *Zostera marina* meadow. 22nd Biennial Coastal and Estuarine Research Federation Conference, San Diego, CA. November 3 –7, 2013. (68)

Ginsberg, H., E. Rulison, G. Pang , R. Burke, L. Beati, G. Hickling, J. Tsao. Contributions of tick phenology to geographical patterns in the incidence of Lyme Disease. Patuxent Science Strategy Planning Workshop, Beltsville, MD. November 2015 (poster presentation) (collaborative).

Gobler, C. Acidification, hypoxia, and algal blooms: Barriers to current and future ecosystem restoration and climate change resilience in Jamaica Bay. Symposium on Ecosystem Resilience Research in Jamaica Bay. City University of New York Graduate Center, New York, NY. November 15, 2015. (oral presentation) (61)

Gobler, C. Acidification and hypoxia in Jamaica Bay: Implications for bivalve populations. State of the Bay, Jamaica Bay New York City, NY. June 15-16, 2016. (oral presentation) (62)

Gobler, C. Assessing the response of the Great South Bay water quality and plankton community to Hurricane Sandy. Fire Island National Seashore, Fire Island National Seashore Biennial Science Conference. Patchogue, NY. March 28, 2014. (oral presentation) (62)

Gobler, C. Factors controlling algal blooms and water quality in Jamaica Bay. Urban Resilience in an Era of Climate Change: Global Input for Local Solutions symposium at Kingsborough College, Brooklyn, NY. October 17-18, 2013. (oral presentation). http://www.sackscom.com/urban-resilience-program-book.pdf (62)

Gobler, C. Response of Great South Bay ecology to a Hurricane Sandy created breach through Fire Island. George Wright Society Biennial Meeting, Oakland, CA. March 29-April 3, 2015. (oral presentation) (62)

Gobler, C., H. Clark, A. Griffith. Vulnerability and resistance of early life stage bivalves to concurrent ocean acidification and hypoxia. 2015 Coastal Estuarine Research Federation (CERF). Portland, OR. November 8-12, 2015. (oral presentation) (61)

Gobler, C., E. Depasquale, H. Clark, H. Baumann, A. Griffith. Vulnerability and resistance among early life stage finfish and bivalves to concurrent ocean acidification and hypoxia (ID: 27637). 2015 Aquatic Sciences Meeting, Association for the Sciences of Limnology and Oceanography. Granada, Spain. February 22-27, 2015. (oral presentation) (61)

Gobler, C. J. Thickman, M. Lang, T. Wilson, C. Flagg. Integration of multiple monitoring systems targeting coastal zones. NYS RISE Workshop. New York University, Brooklyn, NY. March 12, 2015. (online presentation) (62)

Gobler, C.J., J. Collier, A. McElroy, R. Cerrato, B. Peterson, J. Thickman. Storm impacts on coastal ecosystems and fisheries. New York State Resiliency Institute for Storms and Emergencies - Assessment of Cascading Dynamics. March 27, 2014. (online presentation) (62)

Greenberg, J., K. Ames, W. Schmelz, A. Spahn, N. Psuty. Monitoring and evaluation of recovery and resilience: Dune-beach geomorphology of Breezy Point Tip and West Pond, Jamaica Bay, 2016 State of the Bay Symposium, Brooklyn College, Brooklyn, NY. June 16, 2016. (poster presentation) (30)

Greenberg, J., J. Schmelz, K. Ames, A. Spahn, N. Psuty. Spatial and temporal metrics of sediment mobility at Plumb Beach New York City, 2012-2015. Geological Society of America Northeastern Section 51st Annual Meeting 2016, Albany, NY. March 21-23, 2016. (poster presentation) (20)

Greenberg, J., W. Schmelz, I. Beal, A. Spahn, N. Psuty. Coastal geomorphological vectors of change: Application of monitoring protocols in Parks and Refuges. Northeastern Regional Meeting, Geological Society of America, Bretton Woods, NH. March 23-25, 2015. (poster presentation) (20)

Greenberg, J., A. Spahn, W. Schmelz, I. Beal, N. Psuty. Multi-dimensional Topographical Monitoring in Coastal Parks and Refuges. George Wright Society Biennial Meeting, Oakland, CA. March 29-April 3, 2015. (oral presentation) (20)

*Griffith, A., C. Gobler. The effects of climate change on the growth and toxicity of the dinoflagellate, Cochlodinium polykrikoides. 2015 Coastal Estuarine Research Federation, Portland, OR. November 8-12, 2015. (oral presentation) (61)

Grothues, T., J. Dobarro, M. De Luca, D. Levin, B. Meisinger, G. Twilley, C. Fuller, R. Petrecca. Taking advantage of AUV navigation precision for repeated side scan sonar measures. 2015 Coastal Estuarine Research Federation, Portland, OR. November 8-12, 2015. (oral presentation) (22, 23)

*Hagans, D. A. Lamb, B. Branco. Detecting water quality regime shifts in Jamaica Bay, NY. 2015 Coastal Estuarine Research Federation, Portland, OR. November 8-12, 2015. (oral presentation) (4)

Handel, S. Best practices and technology packages for enhancing functional quality of urban landscapes. U.S. Department of State Indo-United States Science and Technology Forum Workshop, Bangalore, India. November 3, 2014. (oral presentation) (26)

Handel, S. Design Collaborations for restoring urban habitats. 2nd International Congress on Urban Green Futures, Bangalore, India. November 5, 2014. (oral presentation) (26)

Handel, S. Key challenges and opportunities for the science and resilience institute at Jamaica Bay (Panel 3). Urban Resilience in an Era of Climate Change: Global Input for Local Solutions symposium at Kingsborough College, Brooklyn, NY. October 17-18, 2013. (Panelist) http://www.sackscom.com/urban-resilience-program-book.pdfPanelist. (26)

Handel, S., C. Kaunzinger. Linking ecological restoration and modern landscape architecture: an urban perspective. American Society of Landscape Architects annual meeting, Symposium on Coastal Integration: Landscape Architecture, Ecology and Sea Level Rise. Denver, CO. November 22, 2014. (oral presentation) (26)

Handel, S. N., C. Kaunzinger, M. Aronson. Restoration of Jamaica Bay fringing habitats: post-Sandy status and new approaches for a resilient future. Symposium on Ecosystem Resilience Research in Jamaica Bay. City University of New York Graduate Center, New York, NY. November 15, 2015. (oral presentation) (26)

Handel, S., C. Kaunzinger, J. Marra. Ecological status and resiliency of Jamaica Bay biota. Science and Resiliency Institute at Jamaica Bay Workshop, Brooklyn College, NY. December 12, 2014. (oral presentation) (26)

Handel, S., A. Kleinbeck, M. Aronson, M. Meixler. Impacts of sea level rise on urban coastal ecosystem services and a pilot study to restore salt marsh plant species to higher elevations. Society of Wetland Scientists, Pacific Northwest Chapter Conference, Olympia, WA. 2015 (26)

*Heck, S., A. Tinoco, B. Peterson. Water quality monitoring in Jamaica Bay, New York. ESRI Map Gallery Conference in San Diego, CA. June 27, 2016. (poster presentation) (68)

*Heck, S., A. Tinoco, B. Peterson. Water quality monitoring in Jamaica Bay, New York. Long Island Natural History Conference at Brookhaven National Lab, Upton, NY. March 24–25, 2017. (poster presentation) (68)

Hill, M. Pray for the Long Knives: Renaming and reclaiming as repair work in the Black Hills. Co-organizer on Panel: National Parks and Native Peoples: Exclusion, Ongoing Connections, and Revitalization. National Council of Public History Annual Meeting. Hartford, CT. March 27-30, 2019. (79)

*Hinrichs, C, C. Flagg, R. Wilson, R. Flood. Fire Island breach: Assessment of changes in Great South Bay's circulation, wind response, and salt balance from observations and model simulations. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (oral presentation) (59)

*Hinrichs, C, C. Flagg, R. Wilson, R. Flood. New Inlet in Great South Bay: Changes in circulation dynamics, residence time, and salt balance in response to low frequency forcing from observations and FCVOM simulations. Ocean Science Meeting, New Orleans, LA. February 21-26, 2016. (poster presentation) (59)

*Hinrichs, C., C. Flagg, R. Wilson, R. Flood, H. Bokuniewicz. FVCOM modeling of the changes in the Great South Bay's hydrodynamic environment due to a breach in Fire Island. 14th Estuarine and Coastal Modeling Conference (ECM14), University of Rhode Island, Kingston, RI. June 13-15, 2016. (oral presentation) (59)

*Hitchings, R.D. and R. Chant. Analysis of the variation in metabolic rates in Jamaica Bay. Research Internships in Ocean Science (RIOS) Conference. August 2015. (poster presentation) (5)

Hychka, K., C. Druschke. Communicating during adaptive management: Media discourse analysis of arguments for and against closing the breach on Fire Island National Seashore. 22nd International Symposium on Society and Resource Management. Houghton, MI. June 22-26, 2016 (oral presentation) (88)

Hychka, K., C. Druschke. Manager perspectives on communication and public engagement in ecological restoration project success. Association of State Wetland Managers State/Tribal/Federal Coordination Meeting, Shepherdstown, WV. March 29-31, 2016. (88, 92)

Hychka, K, C. Druschke. Minding the gap: Analysis of arguments made in the media for and against closing the breach on Fire Island National Seashore. Social Coast Forum, Charleston, SC. February 9-11, 2016. (88)

Hychka, K., C. Druschke, A. Fisher, J. Remillard, M. Skrip. Minding the gap: Analysis of media coverage of the breach on Otis Pike High Dune Wilderness Area. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (poster presentation) (92)

*Jackson, L., B. Peterson. Morphological response of *Zostera marina* (eelgrass) reproductive shoots to increased porewater nutrient availability within a developing meadow. 43rd Benthic Ecology Meeting, Jacksonville, FL. March 19- 22, 2014. (oral presentation) (68)

James, M.-J., P. Rafferty. Assessment of spawning horseshoe crabs in Mid-Atlantic National Parks (2011-2013). Coastal and Estuarine Research Federation, Providence, RI. November 5-11, 2017. (oral presentation)

Jordaan, A., A. Novak, S. Becker, J. Finn, A. Danylchuk. Movement patterns of great barracuda (*Syphraena barracuda*) and yellowtail snapper (*Ocyurus chyrsurus*) around Buck Island Reef National Monument, St. Croix, USVI and next steps. U.S. Caribbean Acoustic Network (US-CAN). Public Seminar, National Park Service Offices. St. Croix, US Virgin Islands. October 26th and 27th, 2016. (72).

*Kang, X., Xia, M. Storm surge simulation of Maryland Coastal Bays: A case study of Hurricane Sandy. Coastal and Estuarine Research Federation, Providence, RI. November 5-11, 2017. (oral presentation) (74)

Karraker, N. Change in the Eastern box turtle population at the William Floyd Estate – Fire Island Herp Inventory revisited. Fire Island National Seashore 9th Biennial Science Conference. Patchogue, NY. March 28, 2014 (97, 98)

Karraker, N., A. Devan-Song. Overcoming challenges in monitoring populations of fossorial amphibians. Society of Northwestern Vertebrate Biology, Arcata, CA. February 28-March 3 2017. (97)

*Kilheffer, C., J. Raphael, L. Ries, H. Underwood. Deer impacts to vegetation recovering from Superstorm Sandy in overwashes of Fire Island National Seashore. George Wright Society, Norfolk, VA. April 2-7, 2017. (oral presentation) (57)

*Kilheffer, C., J. Raphael, L. Ries, H. Underwood. Using digital point-intercept and sub-meter navigation to assess vegetation recovery in Fire Island's wilderness. George Wright Society, Norfolk, VA. April 2-7, 2017. (oral presentation) (57)

*Kilheffer, C., H. Underwood, J. Raphael, L. Ries. Impacts of white-tailed deer herbivory on post-disturbance coastal vegetation recovery. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (poster presentation) (57)

*Kilheffer, C., H. Underwood, J. Raphael, L. Ries. Factors affecting post-Sandy overwash vegetation recovery in the Otis Pike Fire Island High Dune Wilderness Area. 11th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 27-28, 2018 (oral presentation) (57)

King, J., M. LaFrance Bartley. Submerged habitat mapping at Fire Island National Seashore, NY. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (oral presentation) (99)

*LaFrance Bartley, M., J. King, B. Oakley, B. Caccioppoli. A storm of ecological research and monitoring following Hurricane Sandy. 11th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 27-28, 2018 (oral presentation) (99)

*LaFrance Bartley, M., J. King, C. Roman, F. Hegg, B. Peterson, K. Brewer. Marine habitat mapping insights from Fire Island National Seashore 2015 Coastal Estuarine Research Federation. Portland, OR. November 8-12, 2015. (oral presentation) (99)

*Lamb, A., B. Branco. Ecosystem response to wastewater treatment changes in Jamaica Bay, New York. Joint New England Estuarine Research Society and the Coastal Society Spring Meeting, Bristol, RI. April 16-18, 2015. (poster presentation) (4)

*Lauto, R., T. Hattenrath-Lehmann, C. Gobler, R. Fulweiler. The impact of harmful algal bloom and organic matter on sediment denitrification. 2015 Coastal Estuarine Research Federation. Portland, OR. November 8-12, 2015. (oral presentation) (61)

Levin, D., Grothues, T., R. Petrecca, J. Dobarro, M. DeLuca, C. Fuller, G. Taghorn, N. Psuty, A. Spahn, G. Twilley, B. Meisinger. Indirect and direct sampling to evaluate post Sandy benthic habitat in Sandy Hook Bay. 2015 Coastal Estuarine Research Federation. Portland, OR. November 8-12, 2015. (poster presentation) (22, 23)

Levin, D., B. Meisinger, G. Twilley, M. DeLuca, C. Fuller, G. Taghorn, J. Dobarro, T.M. Grothues, R. Petrecca, N.P. Psuty, A. Spahn. Classification of side scan sonar imagery to evaluate post Hurricane Sandy habitat on the bay side of Sandy Hook Gateway National Recreation Area. 2015 Coastal Estuarine Research Federation. Portland, OR. November 8-12, 2015. (poster presentation) (22, 23)

Lynch, J., E. Nicosia, D. Filippini, S. Stevens, D. Skidds, S. Rasmussen, A. Neil. Long term salt marsh monitoring at Fire Island National Seashore By the Northeast Coastal and Barrier Network, Inventory and Monitoring Program. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (poster presentation) (90, collaborative)

Lynch, J., C. Roman. A decade of monitoring the response of salt marsh elevation to sea-level rise at Fire Island. Fire Island National Seashore 9th Biennial Science Conference. Patchogue, NY. March 28-29, 2014. (collaborative)

Lynch, J., C. Roman, D. Cahoon, K. Mederios. Long term monitoring of salt marsh elevation change and sea-level rise at three coastal National Parks in the northeast United States. Society of Wetland Scientists Annual Meeting 2015. Providence, RI. May 31-June 4, 2015. (collaborative)

Marra, J.F, R.J. Chant, A.L. Gordon, C. Zappa. The Jamaica Bay Observing System: Process studies and groundwork for long-term ecosystem research and resilience. Symposium on Ecosystem Resilience Research in Jamaica Bay. City University of New York Graduate Center, New York, NY. November 15, 2015. (oral presentation) (5)

Meixler, M., E. Sanderson, K. Fisher, E. Newton, R. Sacatelli. Modeling biodiversity of the New York coastal urban fringe. 2015 Ecological Society of America. Baltimore, MD. August 9 -14, 2015. (poster presentation) (26)

*Mercurio, T., T. Grothues, J. Dobarro. Classification of submerged habitat around Sandy Hook, NJ. Rutgers Department of Marine and Coastal Sciences, New Brunswick, NJ. 2015. (poster presentation) (22, 23)

Miller, J., R. Lebrun, H. Ginsberg. Effects of environmental factors on the abundance of black-legged ticks. Annual Honors Conference, University of Rhode Island, Kingston, RI. May 2016 (poster presentation) (collaborative)

Neckles, H., G. Guntenspergen, J. Nagel, E. Nicosia, D. Skidds, D. Schoolmaster, J. Grace. A multimetric index for integrated assessment of salt marsh ecosystem condition. Coastal Estuarine Research Federation. Portland, OR. November 8-12, 2015. (collaborative)

Neil, A., J. Cressman, E. Tefft, S. Rasmussen, M. Bradley, C. LaBash, P. August, S. Stevens. Integrating field data collection for salt marsh elevation and vegetation mapping. ESRI International User Conference, San Diego, CA. June 27-30, 2016. (poster presentation) (90)

Neil, A., S. Rasmussen, M. Bradley, C. LaBash, P. August. Elevation, vegetation, and water level: In coastal wetlands there's no substitute for on-the-ground measurements. Coastal GeoTools Conference, Charleston, SC. February 6-9, 2017. (oral presentation) (90)

Nelson, P. Caribou ecosystem workshop. Hosted by the Northwest Arctic Borough Science Program, North Slope Borough Baseline Studies Program. Fairbanks, AL. March 11, 2016. (73)

Nelson, P., E. Holt. Mapping lichen color-groups in western Arctic Alaska using seasonal Landsat composites. American Geophysical Union, San Francisco, CA. December 12-16, 2016. (poster presentation) (73)

Nelson, P., E. Holt. Mapping lichens in western Arctic Alaska, using new species proxies and high-resolution imagery. International Association of Lichenologists. Helsinki, Finland. August 1-5, 2016 (poster presentation) (73)

Nelson, S., C. Eagles-Smith, I. Fernandez, C. Flanagan-Pritz, H. Webber, J. Willacker. A legacy of pollution, a legacy of research: mercury in Acadia National Park. Plenary (Invited), Organization of Biological Field Stations (OBFS) annual meeting, Winter Harbor, ME. September 20–23, 2018. (oral presentation) (71)

Nelson, S., C. Flanagan Pritz. The Dragonfly Mercury Project: Engaging citizen scientists in biodiversity discovery supporting air and water pollution research in US national parks. Maine Water Conference, Augusta, ME. March 29, 2018. (oral presentation) (71)

Nelson, S., J. Willacker, C. EaglesSmith, D. Krabbenhoft, C. Flanagan Pritz, A. Klemmer, H. Greig, C. Chen, R. Haro. The Dragonfly Mercury Project: a National scale evaluation of variation in biosentinel mercury concentrations and landscape drivers across US National Parks. The International Conference on Mercury as a Global Pollutant (ICMGP), Providence, RI. July 16-21, 2017. (oral presentation) (71)

*Neville, C. Presentation on research, inventory, and evaluate cultural landscape of Blow-Me-Down Farm, Saint-Gaudens National Historic Site. NPS Designing the Parks internship program, Boston, MA. August 2018. (46)

Nichols, O. 2017. Shellfish and horseshoe crab larval flux at the East Harbor tidal restoration site: A pilot study. 22nd Annual Cape Cod Natural History Conference, Barnstable, MA. March 11, 2017. (19)

Nichols, O., C. Hudak. 2018. A novel low-volume portable pump system for shellfish larval sampling in shallow, turbulent, 'dirty' environments. 110th Annual Meeting of the National Shellfisheries Association, Seattle, WA. March 18-22, 2018. (19)

Nordstrom, K. N. Jackson, P. Rafferty. Evaluation of the effects of a demonstration project for restoring bayside sediment processes at Sailors Haven Marina. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (oral presentation) (collaborative)

Nordstrom, K. N. Jackson, A. Radar, E. Garrilao. Restoration of bayside sediment processes at Sailors Haven, Fire Island National Seashore. 11th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 27-28, 2018. (oral presentation) (collaborative).

*Novak, A., S. Becker, A. Danylchuk, A. Jordaan. Fine-scale movement and habitat use of yellowtail snapper (*Ocyurus chrysurus*) within a marine protected area in the U.S. Virgin Islands. Intercampus Marine Science Symposium. University of Massachusetts, Dartmouth, MA. 2016. *Awarded best student poster*. (poster presentation) (72)

*Novak, A., S. Becker, J. Finn, C. Pollock, Z. Hillis-Starr, A. Jordaan. Broad-scale movements of three species of reef fish within a marine protected area in the U.S. Virgin Islands. Gulf and Caribbean Fisheries Institute Conference. Grand Cayman, Cayman Islands. November 7-11, 2016. (72)

*Novak, A., S. Becker, J. Finn, C. Pollock, Z. Hillis-Starr, A. Jordaan. Fine and broad-scale movement ecology of yellowtail snapper (*Ocyurus chrysurus*) within a marine protected area in the U.S. Virgin Islands. Intercampus Marine Science Graduate Program Symposium. University of Massachusetts, Boston, MA. 2017. (oral presentation) (72)

*Novak, A., G. Casselberry, S. Becker, J. Finn, A. Danylchuk, C. Pollock, Z. Hillis-Starr, B. DeAngelis, G. Skomal, A. Jordaan. Should I stay, or should I go? Quantifying novel fine-scale multispecies interactions among Caribbean reef fishes in an acoustic positioning system. American Fisheries Society Annual Meeting, Atlantic City, NJ. August 19-23, 2018. (72)

*O'Leary, C., J. Nye, C. Gobler, J. Grear. Population Level Effects of Ocean Acidification on North Atlantic Bivalve Species Using Inverse Demographic Methods. Coastal Estuarine Research Federation. Portland, OR. November 8-12, 2015. (oral presentation) (61)

Olin, J., M. Frisk, R. Cerrato, J. Nye. Storm-induced barrier breach effects on species distribution within a temperate estuary. 145th Annual Meeting of the American Fisheries Society, Portland, OR. August 16-20, 2015 (oral presentation) (65)

Orton, P. Mimicking Jamaica Bay's historical landscape for urban coastal flood resilience. Brooklyn College Spring Seminar Series. Brooklyn, NY. May 10, 2016. (oral presentation) (7)

*Patton, S. Springing forth anew: Parks, preservation, and progress at Roger Williams National Memorial, Providence, Rhode Island. Annual Meeting of the National Council on Public History, Indianapolis, IN. April 19-22, 2017. (poster presentation) (83)

Peterson, B. Assessing estuarine condition through water quality and seagrass monitoring pre- and post-breach and the impact of nekton utilization of seagrass resources at Fire Island National Seashore, NY. 2013 Fire Island Science Conference, Patchogue, NY. (66)

Peterson, B. Assessing the response of the Great South Bay estuarine fauna to Hurricane Sandy: focus on nekton utilization of seagrass habitats. 2013 Fire Island breach and Great South Bay post-Sandy Studies All Scientist Meeting. Stony Brook, NY. (66)

Peterson, B. Effects of Hurricane Sandy on Great South Bay, Long Island: Assessing water quality, seagrass and nekton communities. 11th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 27-28, 2018 (oral presentation) (66, 68)

Peterson, B. Monitoring benthic condition in Great South Bay and the Old Inlet breach. Fire Island National Seashore 9th Biennial Science Conference. Patchogue, NY. March 28, 2014. (oral presentation) (66)

Peterson, B., L. Jackson, B. Furman. The plant-animal interactions your mamma warned you about: suspension-feeding bivalves effecting Zostera marina reproductive growth spurts. 44th Benthic Ecology Meeting, Quebec City, Canada. March 4-7, 2015. (66, 68)

Peterson, B., A. Tinoco, S. Heck. Effects of Hurricane Sandy on Great South Bay: assessing water quality, seagrass and nekton communities. 24th Biennial Coastal and Estuarine Research Federation Conference, Providence Rhode Island. November 5-9, 2017. (oral presentation) (68)

Plaisted, H., K. Renken, J. Morris. Modeling saltmarsh response to sea-level rise in four National Parks. 11th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 27-28, 2018. (oral presentation) (collaborative).

Psuty, N. Coastal geomorphological evolution at Plumb Beach: Sediment budget and management. Urban Resilience in an Era of Climate Change: Global Input for Local Solutions symposium at Kingsborough College, Brooklyn, NY. October 17-18, 2013. (oral presentation). http://www.sackscom.com/urban-resilience-program-book.pdf (30)

Psuty, N., K. Ames, A. Habeck, K. Butler, J. Raphael. Metrics of post-Sandy shorelines position change along Fire Island. 11th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 27-28, 2018. (oral presentation) (20).

Psuty, N., K. Ames, A. Habeck. Bayside beaches: Vectors of change. Symposium on Advancing Shellfish Aquaculture and Red Knot Conservation in Delaware Bay, NJ. Jacques Cousteau National Estuarine Research Reserve, Tuckerton, NJ. September 27-28, 2017. (28)

Psuty, N., K. Ames, A. Habeck. Restoration of sediment pathways and morphological recovery Fort Tilden, Gateway National Recreation Area. Coastal and Estuarine Research Federation Biennial Meeting, Providence, RI. November 5-9, 2017. (oral presentation) (28)

Psuty, N., K. Ames, A. Habeck, G. Liu. Coastal geomorphological evolution post nourishment, 2014-2018. Jacques Cousteau National Estuarine Research Reserve, Tuckerton, NJ. October 15-16, 2018. (28)

Psuty, N., J. Greenberg, W. Schmelz, I. Beal, K. Ames, A. Spahn. Monitoring and evaluation of restoration and resilience: Jamaica Bay Unit shoreline and geomorphology. Symposium on Ecosystem Resilience Research in Jamaica Bay. City University of New York Graduate Center, New York, NY. November 15, 2015. (oral presentation) (30)

Psuty, N., A. Habeck, K. Ames, K. Butler. 2017. Coastal geomorphological evolution: development of a regional database. National Association of Marine Laboratories Biennial Meeting, Tuckerton, NJ. October 24-26, 2018. (28)

Psuty, N., W. Schmelz, K. Ames. The value of 'Stage' in geomorphological maps. Geological Society of America, Annual Meeting, Denver, CO. September 25-28, 2016. (Invited speaker) (20)

Psuty, N., W. Schmelz, K. Ames, A. Spahn, J. Greenberg. Geomorphological map of the glacial and estuarine topography of the William Floyd Estate. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (oral presentation) (20)

Psuty, N., W. Schmelz, J. Greenberg, and I. Beal. Displacement and recovery the post-Hurricane Sandy geomorphological evolution of Fort Tilden Site. Gateway National Recreation Area. 2015 Geological Society of America Annual Meeting. Baltimore, MD. November 1-4, 2015. (oral presentation) (20)

Psuty, N., W. Schmelz, J. Greenberg, I. Beal, A. Spahn. Geomorphological maps as a tool to track change: metrics of impacts of Hurricane Sandy at Fire Island National Seashore. 2015 Geological Society of America Annual Meeting. Baltimore, MD. November 1-4, 2015. (oral presentation) (20)

Psuty, N., W. Schmelz, J. Greenberg, I. Beal, A. Spahn, K. Ames. Geomorphological maps incorporating impacts of Hurricane Sandy at Fire Island National Seashore, Gateway National Recreation Area, and Assateague Island National Seashore: Research and management applications. 2015 Geological Society of America Annual Meeting. Baltimore, MD. November 1-4, 2015. (oral presentation) (20)

Psuty, N., W. Schmelz, A. Spahn, J. Greenberg, I. Beal. Metrics of dune-beach system evolution, Gateway National Recreation Area: Portents of resilience??? George Wright Society Biennial Meeting, Oakland, CA. March 29-April 3, 2015. (Invited speaker) (20)

Psuty, N., W. Schmelz, T. Silveira, A. Spahn, K. Ames, D. Skidds, J. Greenberg. Coastal geomorphological monitoring in Federal holdings as a contribution to a regional database. Geological Society of America, Annual Meeting, Denver, CO., Sept 25-28, 2016. (oral presentation) (30, collaborative)

Psuty, N., A. Spahn, W. Schmelz, J. Greenberg, I. Beal. Monitoring and evaluation of restoration and resilience: Dune-beach geomorphology, Jamaica Bay Unit, Gateway National Recreation Area. Brooklyn College, Broadway Office, Brooklyn, NY. September 23, 2014. (30)

Psuty, N. Coastal geomorphological investigations: A foundation for inquiry and its application. Presentation to group of visiting coastal scientists and managers from Guanddong Provincial Department of Water Resources, China, hosted by Rutgers University Department of Civil and Environmental Engineering. New Brunswick, NJ. October 3, 2016. (lecture and presentation). (21)

Psuty, N. Metrics of coastal change: A multi-scale monitoring program in the Northeast Region of the National Park Service and U.S. Fish and Wildlife Service. Sustainability Seminar Series, Montclair State University, NJ. April 18, 2017 (seminar) (28).

Psuty, N. Meeting participation, regarding the South Shore of Staten Island USACOE project. November 20, 2015 (invited speaker). (21)

Psuty, N. Miller Field dune system restoration and stabilization: Working with natural processes to augment resistance and resilience at the University of Staten Island, August 19, 2014. (lecture and presentation). (21)

Psuty, N. Value analysis meeting on Shore Road Resiliency, October 27-28, 2015. Gateway National Recreation Area (invited speaker). (21)

Rafferty, P. C. Roman. National Park Service at Old Inlet breach monitoring and science coordination. Fire Island National Seashore 9th Biennial Science Conference. Patchogue, NY. March 28, 2014. (collaborative)

Raphael, J., J. Lynch, M. Bradley, S. Rasmussen. Robotics technology helps analyze the effects of sea-level rise and erosion on the sunken forest. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22, 2016. (poster presentation) (57, collaborative)

Rasmussen, S., A. Neil, M. Bradley, C. LaBash, P. August, J. Lynch, S. Stevens. Collecting elevation data for National Park Service salt marshes in response to sea level rise and post- and future storm evaluation. Geological Society of America, Breton Woods, NH. March 23-25, 2015. (poster presentation) (90, collaborative)

Rasmussen, S., A. Neil, M. Bradley, C. LaBash, P. August, J. Lynch, S. Stevens. Collecting elevation data for National Park Service salt marshes in response to sea level rise and post and future storm evaluation. Joint New England Research Society and the Coastal Society Spring Meeting, Bristol, RI. April 16-18, 2015. (poster presentation) (90, collaborative)

Rasmussen, S., A. Neil, M. Bradley, C. Labash, P. August, S. Stevens, D. Skidds. The National Park Service's use of geodesy and derived elevation products in Northeast Coastal National Parks. 2014 ESRI International User Conference. San Diego, CA, July 14-18, 2014. (poster presentation) (88, collaborative)

Rasmussen, S., A. Neil, J. Cressman, M. Bradley, C. LaBash, P. August, C. Lynch, S. Stevens. High resolution mapping of salt marsh vegetation elevation ranges using a robotic total station. New England Research Society 2016 Spring Meeting, York Harbor, ME. April 14-16, 2016. (oral presentation) (90, collaborative)

*Remillard, J. Terra incognita: Community invention and science communication in public lands. 18th Biennial Conference of the Rhetoric Society of America, Minneapolis, MN. May 31-June 3, 2018. (oral presentation) (102)

*Remillard, J. M. Skrip, A. Fisher, K. Hychka, C.G. Druschke. Using science communication to connect stakeholders and scientists in the wake of Hurricane Sandy. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (poster presentation) (92)

Renken K., J. Morris, J. Lynch, H. Bayley, A. Neil, S, Rasmussen, M. Tyrrell, M. Tanis. No substitute for going to the field: Correcting LiDAR DEMs in salt marshes. Fall Meeting American Geophysical Union. San Francisco, CA. December 12-16 2016. (collaborative)

Roman, C. National Park Service and university research partnerships. University of Rhode Island, Coastal Institute. Presentation before a delegation of protected area managers from Chile and Columbia; sponsored by National Park Service International Program. Narragansett, RI. May 22, 2014.

Roman, C. Building resilience in the wake of Hurricane Sandy: What we've learned. Presenter and panelist. Sponsored by US Department of the Interior, Office of Policy Analysis, Washington, DC. November 9, 2015. (collaborative)

Roman, C. Overview of multiple studies assessing the response and resilience of coastal parks to Hurricane Sandy. The George Wright Society Biennial Conference on Parks, Protected Areas, and Cultural Sites. Oakland, CA. March 29-April 3, 2015. (collaborative)

Roman, C. Submerged marine habitat mapping in Hurricane Sandy impacted National Parks. Workshop coordinator and facilitator. Sponsored by National Park Service. Rutgers University, New Brunswick, NJ. March 11, 2014. (collaborative)

Rothwell, A., H. Ginsberg. Bee survey at Napatree Point. Napatree Point Conservation Area, Science Advisors Meeting, Watch Hill, RI. November 2017 (collaborative)

Sanderson, E. A view of the historical ecology of Jamaica Bay from the Welikia Project. Brooklyn College Spring Seminar Series. Brooklyn, NY. April 19, 2016. (oral presentation) (7)

Sanderson, E. Visionmaker Jamaica Bay: Sharing visions of ecological resilience after Hurricane Sandy. The George Wright Society Biennial Conference on Parks, Protected Areas, and Cultural Sites, Oakland, CA. March 29 - April 3, 2015. (7)

Sanderson, E. The Welikia Project: A natural history context for resilience in Jamaica Bay in New York City. Urban Resilience in an Era of Climate Change: Global Input for Local Solutions symposium at Kingsborough College, Brooklyn, NY. October 17-18, 2013. (oral presentation) (7)

*Schmelz, W., I. Beal, J. Greenberg, A. Shahn, N. Psuty. Investigating the efficacy of reduced point density LiDAR to measure topographical change in coastal dunes (Fire Island, NY). Northeastern Regional Meeting, Geological Society of America, Bretton Woods, NH. March 23-25, 2015. (poster presentation) (30)

*Schmelz, W., I. Beal, A. Spahn, J. Greenberg, N.P. Psuty. Conceptual basis for mapping geomorphological evolution in coastal parks. George Wright Society Biennial Meeting, Oakland, CA. March 29-April 3, 2015. (oral presentation) (20)

*Schmelz, W., J. Greenberg, I. Beal, N.P. Psuty. Comparative analysis of geomorphological maps to generate metrics of change caused by Hurricane Sandy on Fire Island. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (poster presentation) (20)

*Schmelz, W., N. Psuty, A. Spahn. The intersection of measurement accuracy and process scales in the LiDAR-based quantification of coastal geomorphical change. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (poster presentation) (20)

*Schmelz, W., T. Silveira, I. Beal, J. Greenberg, A. Spahn, K. Ames, N. Psuty. Trends of dune crest displacement 1976-2012, Fire Island, New York. 2015 Geological Society of America Annual Meeting. Baltimore, MD. November 1-4, 2015. (oral presentation) (20)

*Schmelz, W., A. Spahn, K. Ames, J. Greenberg, I. Beal, N. Psuty. Interactions of sedimentary supply and coastal topography at Sandy Hook, New Jersey (Gateway National Recreation Area). 2015 Geological Society of America Annual Meeting. Baltimore, MD. November 1-4, 2015. (oral presentation) (20)

*Schmelz, W., A. Spahn, K. Ames, J. Greenberg, E. Haussner, M. Endicott, N. Psuty. Monitoring coastal geomorphology through volumetric quantification of topographical change: Establishment of a regional protocol. Geological Society of America, Annual Meeting, Denver, CO. Sept 25-28, 2016. (poster presentation) (20)

*Schmelz, W., Spahn, A., Ames, K., Greenberg, J., Beal, I., and Psuty, N. P. Interactions of Sediment Supply and Coastal Topography at Sandy Hook, New Jersey. (Gateway National Recreation Area). 2015 Geological Society of America Annual Meeting, Baltimore, MD. November 1- 4, 2015. (oral presentation) (20)

Scott, Z., R. Wicks, M. Mello, H. Ginsberg, S. Alm. Native bee diversity and pollen foraging specificity in cultivated highbush blueberry plantings in Rhode Island. Entomological Society of America annual conference. Minneapolis, MN. November 15-18, 2015 (poster presentation) (collaborative)

Serman, E., G.Puggioni, J. Couret, H. Ginsberg, A. Akanda. Understanding the impact of anthropogenic and environmental changes on dengue fever cases in Puerto Rico. American Geophysical Union 2016. San Francisco, CA. December 12-16, 2016. (poster presentation) (collaborative)

Serman, E., H. Ginsberg, J. Couret A. Akanda. Understanding environmental and climatic influences on regional differences and spatio-temporal scale issues of dengue fever transmission in Puerto Rico. American Geophysical Union 2015 Fall Meeting, San Francisco, CA. December 14-18, 2015 (poster presentation) (collaborative)

Skidds, D. GIS in emergency preparedness and response: Lessons learned from Hurricane Sandy. Annual Scientific Support for Environmental Emergency Response (SSEER) Workshop, Narragansett, RI. 2016. (collaborative)

Skidds, D., H. Neckles, G. Guntenspergen, J. Nagel, E. Nicosia, D. Schoolmaster, S. Stevens, J. Grace. Use of GIS in the development of a multimetric index (MMI) for integrated assessment of salt marsh condition in Northeastern Coastal National Parks. Annual Northeast Arc Users Group Conference, Burlington, VT. November 9, 2015 (oral presentation) (collaborative)

Skidds, D., N. Psuty, T. Silveira, A. Love. 2014. Long-term monitoring of ocean shoreline position change at Fire Island National Seashore. Fire Island National Seashore 9th Biennial Science Conference. Patchogue, NY. March 28-29, 2014. (Collaborative)

Spahn, A. Tracking change and recovery: Metrics of resilience. George Wright Society, Norfolk, VA. April 2-7, 2017. (20)

Spahn, A., N. Psuty. Coastal geomorphological monitoring in parks, refuges, and reserves. Coastal GeoTools 2015, North Charleston, SC. March 30-April 2, 2015. (oral presentation) (20)

Spahn, A., N. Psuty. Monitoring coastal geomorphical change: Creation of a regional Federal geodatabase. Association of American Geographers, San Francisco, CA. March 29-April 2, 2016. (oral presentation) (20)

Stevens, S. A storm of ecological research and monitoring following Hurricane Sandy. 11th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 27-28, 2018 (oral presentation) (collaborative)

Solecki, W. Supporting resilience through learning and knowledge networks. A report from the Stevens Research Institute at Jamaica Bay (SRIJB) Symposium on Ecosystem Resilience Research. Symposium on Ecosystem Resilience Research in Jamaica Bay. City University of New York Graduate Center, New York, NY. November 15, 2015 (7)

Tefft, E. Exploring topobathy LiDAR. Connecticut User-to-User Network at Eastern Connecticut State University, Willimantic, CT. November 18, 2015. URL: http://ctgis.uconn.edu/archive/2015_11_18.htm. (oral presentation) (88)

Tefft, E. Implementing ArcGIS Pro tasks to create shareable workflows. Spring 2015 Northeast Arc Users Group (NEARC) meeting. University of Massachusetts, Amherst, MA. May 11, 2015. (oral presentation) (88)

Tefft, E., G. Bonynge. A protocol for quickly creating high-quality mosaic datasets with orthoimagery. 2014 Northeast Arc Users Group (NEARC) annual conference, Groton, CT. October 5-8, 2014. (oral presentation) (88)

Tefft, E., G. Bonynge, R. Duhaime, A. Mandeville, A. Campbell, C. LaBash, S. Stevens, D. Skidds, M. Christiano, P. August. Mosaic Datasets and LiDAR Data: Quick processing and versatile results. ESRI International User Conference, San Diego, CA. July 14-18, 2014. Awarded second place in the "Best Instructional Poster" category. (poster presentation) (88, collaborative)

Tierney, G. Are we succeeding? Monitoring and assessing condition of natural resources in National Parks. Wells College Science Colloquium, Aurora, NY. September 23, 2016. (oral presentation) (52)

*Tinoco, A., S. Heck, B. Peterson. 2015. Effects of Hurricane Sandy on Great South Bay, Long Island: Assessing water quality, seagrass and nekton communities. New York Seagrass Symposium, Riverhead, NY. April 5, 2016. (66)

*Tinoco, A., S. Heck, B. Peterson. Effects of Hurricane Sandy on Great South Bay, Long Island: Assessing water quality, seagrass and nekton communities. 100th Western Society for Naturalists meeting in Monterey Bay, CA. November 10-13, 2016. (oral presentation) (66, 68)

*Tinoco, A., S. Heck, B. Peterson. Effects of Hurricane Sandy on Great South Bay, Long Island: Assessing water quality, seagrass and nekton communities. 2016 Benthic Ecology Meeting, Portland, ME. May 16-19 2016. (oral presentation) (66, 68)

*Tinoco, A., S. Heck, B. Peterson. Effects of Hurricane Sandy on Great South Bay, Long Island: Assessing water quality, seagrass and nekton communities. 2017 Benthic Ecology Meeting, Myrtle Beach, S.C. April 12-16, 2017. (poster presentation) (66, 68)

Tsao, J., L. Beati, R. Burke, H. Ginsberg, G. Hickling, N. Ogden and the Lyme Gradient Consortium. Multiple ecological factors contribute to the gradient of Lyme *borreliosis* throughout the Eastern U.S. International Conference on Lyme Borreliosis, Centers for Disease Control and Prevention (CDC), Atlanta, GA. September 11-14 2018 (collaborative)

Walden, M. Box turtle hibernation at the William Floyd Estate. 10th Biennial Fire Island National Seashore Science Conference. Patchogue, NY. April 22-23, 2016. (oral presentation) (97, 98)

Waldman, J., W. Solecki. The environmental history of Jamaica Bay: A foundational monograph. Symposium on Ecosystem Resilience Research in Jamaica Bay. City University of New York Graduate Center, New York, NY. November 15, 2015. (oral presentation) (7)

*Wallace, R., C. Gobler. Coastal ocean acidification: Contrasting diurnal, seasonal, and spatial patterns among temperate coastal habitats. 2015 Coastal Estuarine Research Federation (CERF). Portland, OR. November 8-12, 2015. (oral presentation) (61)

Wang, H., Q. Chen, K. Hu, G. A. Snedden, E. K. Hartig, J. C. Lynch, P. M. Orton, P. S. Rafferty, and C. L. Johnson. A numerical study of Hurricane Sandy-induced salt marsh morphological change in Jamaica Bay, New York City. 2016 Ecological Society of America Ft. Lauderdale, FL. August 7-12, 2016. (oral presentation) (collaborative)

*Webber, H., C. Flanagan Pritz, M. Schauffler, B. Zoellick, S. Nelson, C. Eagles-Smith, D. Krabbenhoft. Tools for data literacy: Engaging citizen scientists in analysis of mercury data from national parks across the U.S**.** Citizen Science 2015 Conference, San Jose, CA. February 11-12, 2015 (poster presentation) (35)

*Wright, J., T. Grothues, R. Petrecca, G. Taghorn, C. Fuller. Analyses of benthic invertebrate community and habitat at Sandy Hook, New Jersey. Rutgers Department of Marine and Coastal Sciences. New Brunswick, NJ. 2015. (poster presentation) (22, 23)

*Young, C., C. Gobler Ocean acidification accelerates the growth of estuarine macroalgae. 2015 Coastal Estuarine Research Federation. Portland, OR. November 8-12, 2015. (oral presentation) (61)

Zacharias, J., R. Cerrato, J. Nye, M. Frisk. Changes in Distribution and Abundance in Two Potentially Competing Benthic Predators, Blue and Lady Crabs Following a Barrier Island Breach. 145th Annual American Fisheries Society Meeting, Portland, OR. August 16-20, 2015 (oral presentation) (65)

Public Presentations *(17)*

Borrelli, M. Public presentation on submerged habitat mapping at Cape Cod National Seashore. Brewster Conservation Day, Brewster, MA. July 11, 2015 (17)

Borrelli, M. Public presentation on submerged habitat mapping at Cape Cod National Seashore. Orleans Pond Collation, Orleans, MA. September 19, 2015 (17)

Borrelli, M. Public presentation on submerged habitat mapping at Cape Cod National Seashore (title unknown). The Friends of Pleasant Bay Annual Dinner, Cape Cod, MA. July 20, 2015 (17)

Chant, R. Estuarine and sediment transport mechanisms in Jamaica Bay. Brooklyn College Spring Seminar Series, NY. May 17, 2016. (oral presentation) (7)

Flagg, C. The Great South Bay and the New Inlet. Bellport Middle School, NY. December 21, 2013. Powerpoint presentation. http://po.msrc.sunysb.edu/GSB/ (59)

Flagg, C. Great South Bay Project. Bellport Community Center, December 1, 2012. Powerpoint presentation. http://po.msrc.sunysb.edu/GSB/ (59)

Flagg, C. The New inlet and its evolution since Sandy. Bellport Middle School. March 23, 2013. Powerpoint presentation. http://po.msrc.sunysb.edu/GSB/ (59)

Hart, D. Lecture on mobile collection-based application for Springfield Armory. Big3STEM after-school programs sponsored by the Urban League of Springfield, Springfield High School. April 2018. Springfield, MA (78)

*Heck, S. 2017. Hurricane Sandy presentation (exact title not available). The Nature Talks Series, Moustache Brewery, Riverhead, NY. August 2, 2017. (69)

James, M.-J. Inviter speaker. Community School Career Day for STEM (Science, Technology, Engineering, and Math) careers. Cumberland, RI. January 2016.

James, M.-J. Inviter speaker. North Smithfield High School Career Day for STEAM (Science, Technology, Engineering, Architecture, and Math) careers. North Smithfield, RI. October 2015.

Karraker, N., Amphibians and reptiles of the Eastern US. (public lecture and field trip). Narragansett, RI. March 2016. (97)

Karraker, N. In search of amphibians (public lecture and field trip). Tiverton, RI, April 2016. (97)

Karraker, N. Reptiles and amphibians of Virginia. Nature in the Park Speaker Series, Colonial National Historical Park, Williamsburg, VA. May 2016. (97)

Peterson, B. Beneath the waves - A history of Long Island seagrass. The Nature Talks Series, Moustache Brewery, Riverhead, NY. October 13, 2017 (68)

Peterson, B. Presentation about ecological benefits of Old Inlet Breach on Bay and Great South Bay. 4th Annual Community Meeting, Bellport Middle School. Bellport, NY. October 16, 2016. (66, 68)

Peterson, B. Presentation on the impacts of the breach on water quality, seagrass abundance and faunal utilization of the seagrass. 2nd Annual Science Research Symposium at Hampton Bays High School, Hampton Bays, NY. April 30, 2015. (68)

University Courses and Lectures *(with focus on NAC-CESU projects; 18)*

August, P. 2018. Advanced GIS Analysis of Environmental Data, Lecture and Lab (NRS 522). University of Rhode Island, Kingston, RI. (91)

August, P. 2014, 2016, 2018. Course: Advanced Spatial Analysis: GPS/GNSS Data Acquisition and Processing (NRS 524). University of Rhode Island, Kingston, RI. (91)

August, P, A. Campbell. 2014. Course: Fundamentals of GIS Lecture and Lab (NRS 410). University of Rhode Island, Kingston, RI. (91)

August, P, Y.Q. Wang. 2014. Course: Concepts in GIS and Remote Sensing of GIS Lecture and Lab (NRS 409-509). University of Rhode Island, Kingston, RI. (91)

Auwaerter, J. Lecture in Introduction to Landscape Preservation course (ESF LA 481/681). State University of New York– College of Environmental Science and Forestry, Syracuse, NY. Spring 2016. (36)

Auwaerter, J. Field School at Acadia National Park. Summer Semester (LSA 470/671) State University of New York– College of Environmental Science and Forestry, Acadia National Park. July 14-24, 2015 (38)

Auwaerter, J. Lecture in Special topics in landscape architecture related to First Day Union 1st Corps Battlefield at Gettysburg National Military Park (LSA 496). State University of New York- College of Environmental Science and Forestry, Syracuse, NY. Spring 2017 (42)

Auwaerter, J. Research methods and graduate introductory summary. State University of New York– College of Environmental Science and Forestry, Syracuse, NY. Fall-Spring 2015-2016. (36)

Borrelli, M. Lecture in Coastal and Shelf Oceanography. Cape Cod Community College, spring 2015 (17)

*Campbell, A. Salt marsh monitoring in Jamaica Bay from 2003 to 2013: A decade of change from natural and anthropogenic factors. Biological and Environmental Science Colloquium Series. University of Rhode Island, Kingston, RI. February 10, 2017. (105)

*Campbell, A. Exploring Jamaica Bay: An ecological history of an urban estuary. University of Rhode Island, Natural Resource Science Seminar, Kingston, RI. March 27, 2015. (105)

Ginsberg, H. Environment, human demography, and transmission patterns of vector- borne diseases. Lecture in Honors course HPR 309/310 The Global Challenge of Emerging Infectious Diseases, R.A. LeBrun, University of Rhode Island, Kingston, RI (guest lecture in 2014, 2015, 2016). (collaborative)

James, M.-J. Blood, bait, and birds. Invited Lecture Applied Coastal Ecology (NRS 555). University of Rhode Island, Kingston. Fall 2014.

James, M.-J. Blood, bait, and birds. Invited Lecture Applied Coastal Ecology (NRS 555). University of Rhode Island, Kingston. Spring 2017.

Karraker, N. Effects of DDT spraying on amphibian populations at the FIIS William Floyd Estate. Lecture: Wetland Ecology (NRS 423), University of Rhode Island, Kingston, RI. September 2016. (97, 98)

Karraker, N. Lecture: Amphibian and reptile monitoring. Herpetology (NRS 417), University of Rhode Island, Kingston, RI. April 2016. (97)

*LaFrance Bartley. Submerged habitat mapping at Fire Island National Seashore, NY, USA. University of Rhode Island, Graduate School of Oceanography, OCG 695 – Seminar in Oceanography, Narragansett, RI. March 28, 2016. (100)

Roman, C. Natural resource management issues confronting estuaries in the Northeast: Focus on salt marshes and habitat restoration. Lecture in Applied Coastal Ecology (NRS 555). University of Rhode Island. September 2014. January 2017.

Magazine Articles/Newspaper Articles/Interviews *(8 products)*

Psuty, N. Interview with Chris Manthey, Surfrider Foundation. Discussion of the role of 'back-passing' as an option to recycle sand at Sandy Hook. (Gateway National Recreation Area, Highlands, NJ.) October 21, 2016. (21)

Psuty, N. Telephone interview with Alison Kanski, Climate Central. Discussion regarding coastal erosion, sea-level rise, and coastal evolution. August 3, 2015. (30)

Newspaper Article: Underwater baselines established by URI students after Hurricane Sandy. S. Shalhoub. Providence Business News. November 16, 2016. URL: https://pbn.com/Underwater-baselines-established-by-URI-students-after-Hurricane-Sandy,118565/ (99)

Newspaper Article: URI researchers, students map underwater habitats. Eco RI News. November 2, 2016. https://www.ecori.org/narragansett-bay/2016/11/1/uri-researchers-students-map-underwater-habitats-post-hurricane-sandy (99)

Newspaper Article: URI researchers tracking changes to ocean floor. P. Mangione. WPRI.com. December 9, 2016. https://www.wpri.com/news/education/uri-researchers-tracking-changes-to-ocean-floor/1044544386 (99)

Newspaper Article: Researchers mapping underwater landscape off Fire Island. E. Dooley. Newsday, Suffolk Long Island, NY. August 18, 2015. http://www.newsday.com/long-island/suffolk/researchers-mapping-underwater-landscape-off-fire-island-1.10751535 (99)

Saunders, J. Bat surveys commence again at Cape Cod National Seashore. CapeCod.com Newscenter. September 30, 2017. https://www.capecod.com/newscenter/bat-surveys-to-commence-again-at-cape-cod-national-seashore-this-fall/ (48, 49)

Sutton, M, Urban Horticulture Institute Team Evaluates Condition of National Mall Elms. City-Trees. July/August 2018 p. 27-31

http://read.dmtmag.com/i/1002119-july-august-2018 (10)

Internet Media: *Photo Stories, Researcher Profiles, Resource Briefs, Outreach Materials (38 products)*

Field Cards for Identifying Dragonfly Larvae to Family. https://www.nature.nps.gov/air/Studies/air_toxics/dragonfly/docs/DragonflyLarvaeFlashcards_june-2014.pdf (35)

Hamilton, C., J. Remillard, C. Druschke. 2018. Jamaica Bay: Past, present, and future. Story Map. Northeast Coastal and Barrier Network. National Park Service. https://edc.maps.arcgis.com/apps/MapJournal/index.html?appid=ea227243c4b14f92a6906edbea65bcc5 (102)

How citizen scientists are helping The Dragonfly Project. https://www.nature.nps.gov/air/Studies/air_toxics/dragonfly/docs/DragonflyProjectResearchArc_July-2014.pdf (35)

Photo Story: National Park Service Hurricane Sandy coastal resiliency research. https://www.arcgis.com/apps/MapSeries/index.html?appid=d953beffd6704440bb2464283e7bd740 (92)

Photo Story: National Park Service, Northeast Coastal and Barrier Inventory & Monitoring. 2018. https://www.nps.gov/im/ncbn/index.htm (92)

Photo Story: Northeast Coastal and Barrier Network Story Map. Getting up close and personal with reptiles and amphibians of Colonial National Historical Park. https://www.nps.gov/gis/storymaps/mapjournal/v1/index.html?appid=f1b905f687ac4c45b5a4a7aaeb94b3de (92)

Photo Story: Old Inlet Breach-Fire Island National Seashore pre-and post-Hurricane Sandy. NPS Hurricane Sandy Science. https://edc.maps.arcgis.com/apps/StorytellingSwipe/index.html?appid=f0a60eed919c4d00b00bf4ae06d67b7e (92)

Researcher Profile: Northeast Coastal and Barrier Network Hurricane Sandy Science: A wildlife biologist in the making (Reina Galvan) 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/profile-resource-briefs. (88, 92)

Researcher Profile: Northeast Coastal and Barrier Network Hurricane Sandy Science: After Sandy, National Parks get storm-ready. Park Scientists muster elevation data and enhance information systems to prepare for future storms (Peter August) 2015. https://science.nature.nps.gov/im/units/ncbn/assets/HxSandy/EmployeeProfiles/August_EmployeeProfile_RB_2015_508version_07Oct2015.pdf (88, 90, 92)

Researcher Profile: Northeast Coastal and Barrier Network Hurricane Sandy Science: Coastal resilience goes social: How a National Park Service intern uses social media to fuel conversation about coastal resilience (Marianna Falso) 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/profile-resource-briefs. (88, 92)

Researcher Profile: Northeast Coastal and Barrier Network Hurricane Sandy Science: Collaborating to support science-based decisions. How one geomorphologist re-invented his research to help protect coastal communities (Norbert Psuty) 2017. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/profile-resource-briefs. (92)

Researcher Profile: Northeast Coastal and Barrier Network Hurricane Sandy Science: Discovering the secrets of resilience: Through long-term monitoring, National Park Service scientists learn how coastal places rebound from storms and adapt to sea level rise (Jim Lynch) 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/profile-resource-briefs. (88, 92)

Researcher Profile: Northeast Coastal and Barrier Network Hurricane Sandy Science: Exploring the woods under the water. Dr. Bradley Peterson examines the resilience of Great South Bay (Bradley Peterson) 2017. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/profile-resource-briefs. (92)

Researcher Profile: Northeast Coastal and Barrier Network Hurricane Sandy Science: Sounding seafloor habitats: Researchers use sonar to map underwater resources of four National Parks (Monique LaFrance) 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/profile-resource-briefs. (88, 92)

Researcher Profile: Northeast Coastal and Barrier Network Hurricane Sandy Science: This park's personality: Interpretative Ranger Sonia Taini brings shoreline dynamics and Post-Sandy resilience research at Fore Island National Seashore to life for visitors 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/profile-resource-briefs. (88, 92)

Researcher Profile: Northeast Coastal and Barrier Network Hurricane Sandy Science: This park's personality: Jordan Raphael and the quest to preserve the Sunken Forest 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/profile-resource-briefs. (88, 92)

Researcher Profile: Northeast Coastal and Barrier Network. Keys to tomorrow: Chris Gobler studies storm impacts, resilience, and restoration opportunities in coastal parks. 2018. (102)

Researcher Profile: John King URL: https://science.nature.nps.gov/im/units/ncbn/assets/HxSandy/EmployeeProfiles/La_France_EmployeeProfile_RB_2015_508version_05Oct2015.pdf (88)

Researcher Profile: Jessica Cressman: True to Her Roots: One Woman's Passion for Conservation Becomes a Reality in her Native Rhode Island, 2018. (102)

Researcher Profile: Restoring History at Farm Lane (Samantha Dean) https://www.nps.gov/hofr/blogs/restoring-history-at-farm-lane.htm (53)

Resource Brief: Improving National Park Service communication before and after natural disasters. (88)

Resource Brief: Northeast Coastal and Barrier Network Fire Island National Seashore. Can box turtles help control invasive fruiting plants? 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/profile-resource-briefs. (92)

Resource Brief: Northeast Coastal and Barrier Network. Documenting the toll of coastal storms - with smartphones. 2018 (102)

Resource Brief: Northeast Coastal and Barrier Network Fire Island National Seashore. The Fire Island Wilderness Breach: Shifting shorelines and shoals. 2016. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs (88, 92)

Resource Brief: Northeast Coastal and Barrier Network Hurricane Sandy Science: Learning about natural resilience after large storms. 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs (92)

Resource Brief: Northeast Coastal and Barrier Network Hurricane Sandy Science: How adaptable and robust are urban coastal ecosystems? 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs. (88)

Resource Brief: Northeast Coastal and Barrier Network Hurricane Sandy Science: Barrier Islands: Shifting sands provide protection and habitat. 2017. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs (88, 92)

Resource Brief: Northeast Coastal and Barrier Network Hurricane Sandy Science: Elevation mapping helps build resilient coastal communities. 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs (88, 92)

Resource Brief: Northeast Coastal and Barrier Network. Mapping your way to successful science communication. 2018 (102)

Resource Brief: Northeast Coastal and Barrier Network. More impact for more people: GeoCorps internship program advances park science, promotes stewardship, and launches careers. 2018. (102)

Resource Brief: Submerged habitat mapping: Filling a data gap and facilitating resource stewardship following Hurricane Sandy. 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs. (92, 99, 100)

Resource Brief: Northeast Coastal and Barrier Network Hurricane Sandy Science: Films to promote unity and healing. Filmmaker Sarah Gulick engages people in the science behind resilience. 2016. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs (92)

Resource Brief: Northeast Coastal and Barrier Network Hurricane Sandy Science: Geospatial data management. Powering storm preparedness & response. 2015. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs (92)

Resource Brief: Northeast Coastal and Barrier Network Hurricane Sandy Science: Hurricane Sandy resilience and recovery efforts: Using critical elevation data to protect park resources. 2014. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs (88, 92)

Resource Brief: Northeast Coastal and Barrier Network Hurricane Sandy Science: Long-term monitoring provides key data on the impact of storms. 2016. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs (92)

Resource Brief: Northeast Coastal and Barrier Network Hurricane Sandy Science: Virtual experiments guide resilience planning in Jamaica Bay. 2016. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs (92)

Resource Brief: Northeast Coastal and Barrier Network Hurricane Sandy Science: Visionmaker Jamaica Bay: Share your vision of the future! 2017. https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs (92)

Resource Brief: Sandy provides rare glimpse into barrier island processes https://sites.google.com/a/uri.edu/nps-hurricanesandy-science/science-communication-products/project-resource-briefs (88)

Internet Media: Films & Videos *(7 products)*

Dragonfly Mercury Project data collection training video. https://www.schoodicinstitute.org/what-we-offer/educational-scientific-partnerships/dragonfly-mercury-project/ (35)

Ettinger, T. Five-year study working to preserve bats. Spectrum News Video. October 29, 2017. http://spectrumlocalnews.com/nys/central-ny/going-green/2016/11/6/five-year-study-working-to-preserve-bats (48, 49, 50).

Ettinger, T. Going Green: Where bats hibernate. Spectrum News Video. October 29, 2017. http://spectrumlocalnews.com/nys/central-ny/going-green/2017/10/29/going-green–researching-where-bats-are-hibernating (48, 49, 50).

Fire Island Wilderness Breach: Behind the Scenes: Aerial survey with Charlie Flagg. 2016. https://www.youtube.com/watch?v=oTSTsHx-KNQ&feature=youtu.be (92)

Post-Hurricane Sandy Science efforts in the Parks. Short film documentary about salt marsh elevations and water level for NPS (2015) (90)

The Breach at Fire Island National Seashore. YouTube video. 2017. https://www.youtube.com/watch?v=bnoeHYBDMsM&feature=youtu.be (57, 92)

Research for a better future: Restoration & resilience in Jamaica Bay, NY. 2017. https://www.youtube.com/watch?v=7uL5-LonMuA&feature=youtu.be (92)

Internet Media: Digital data, digital maps, geospatial datasets *(55 products)*

OPUS: Online Positioning User Service: Plumb Beach survey monument for Breezy Point, Gateway NRA:

https://www.ngs.noaa.gov/OPUS/getDatasheet.jsp?PID=BBFL14&style=modern (90)

OPUS: Online Positioning User Service: Plumb Beach survey monument for Plumb Beach, Gateway NRA: https://www.ngs.noaa.gov/OPUS/getDatasheet.jsp?PID=BBFL12&style=-modern (90)

Shaw, N., M. Bradley. 2014. Acadia MHHW- NAVD88 conversion surface. Acadia National Park. https://irma.nps.gov/DataStore/Reference/Profile/2214615 (91, collaborative)

Shaw, N., M. Bradley. 2014. Acadia sentinel sites. Acadia National Park https://irma.nps.gov/DataStore/Reference/Profile/2216307 (91, collaborative)

Shaw, N., M. Bradley. 2014. Acadia SLOSH category 1-4 inundation polygons. Acadia National Park. https://irma.nps.gov/DataStore/Reference/Profile/2214611 (91, collaborative)

Shaw, N., M. Bradley. 2014. Acadia SLOSH category 1-4 storm surge points. Acadia National Park. https://irma.nps.gov/DataStore/Reference/Profile/2213862 (91, collaborative)

Shaw, N., M. Bradley. 2014. Acadia water depths for 60cm, 1m & 2m sea level rise. Acadia National Park. https://irma.nps.gov/DataStore/Reference/Profile/2214612 (91, collaborative)

Shaw, N., M. Bradley. 2014. Acadia water surface elevations for 60cm, 1m & 2m sea level rise. Acadia National Park. https://irma.nps.gov/DataStore/Reference/Profile/2214613 (91, collaborative)

Shaw, N., M. Bradley. 2014. Assateague Island MHHW- NAVD88 conversion surface. Assateague Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215171 (91, collaborative)

Shaw, N., M. Bradley. 2014. Assateague Island sentinel sites. Assateague Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2216307 (91, collaborative)

Shaw, N., M. Bradley. 2014. Assateague Island SLOSH category 1-4 inundation polygons. Assateague Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215160 (91, collaborative)

Shaw, N., M. Bradley. 2014. Assateague Island SLOSH category 1-4 storm surge points. Assateague Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215159 (91, collaborative)

Shaw, N., M. Bradley. 2014. Assateague Island water depths for 60cm, 1m & 2m Sea Level Rise. Assateague Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215166 (91, collaborative)

Shaw, N., M. Bradley. 2014. Assateague Island water surface elevations for 60cm, 1m and 2m sea level rise. Assateague Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215169 (91, collaborative)

Shaw, N., M. Bradley. 2014. Boston Harbor Islands MHHW-NAVD88 conversion surface. Boston Harbor Islands National Recreation Area. https://irma.nps.gov/DataStore/Reference/Profile/2215192 (91, collaborative)

Shaw, N., M. Bradley. 2014. Boston Harbor Islands SLOSH category 1-4 inundation polygons. Boston Harbor Islands National Recreation Area. https://irma.nps.gov/DataStore/Reference/Profile/2215183 (91, collaborative)

Shaw, N., M. Bradley. 2014. Boston Harbor Islands sentinel sites. Boston Harbor Islands National Recreation Area. https://irma.nps.gov/DataStore/Reference/Profile/2216310 (91, collaborative)

Shaw, N., M. Bradley. 2014. Boston Harbor Islands category 1-4 storm surge points. Boston Harbor Islands National Recreation Area. https://irma.nps.gov/DataStore/Reference/Profile/2215180 (91, collaborative)

Shaw, N., M. Bradley. 2014. Boston Harbor Islands water depths for 60cm, 1m & 2m Sea Level Rise. Boston Harbor Islands National Recreation Area. https://irma.nps.gov/DataStore/Reference/Profile/2215188 (91, collaborative)

Shaw, N., M. Bradley. 2014. Boston Harbor Islands water surface elevations for 60cm, 1m & 2m sea level rise. Boston Harbor Islands National Recreation Area. https://irma.nps.gov/DataStore/Reference/Profile/2215190 (91, collaborative)

Shaw, N., M. Bradley. 2014. Cape Cod MHHW-NAVD88 conversion surface. Cape Cod National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215258 (91, collaborative)

Shaw, N., M. Bradley. 2014. Cape Cod sentinel sites. Cape Cod National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2216311 (91, collaborative)

Shaw, N., M. Bradley. 2014. Cape Cod SLOSH category 1-4 inundation polygons. Cape Cod National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215226 (91, collaborative)

Shaw, N., M. Bradley. 2014. Cape Cod SLOSH category 1-4 storm surge points. Cape Cod National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215223 (91, collaborative)

Shaw, N., M. Bradley. 2014. Cape Cod water depths for 60cm, 1m & 2m sea level rise. Cape Cod National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215259 (91, collaborative)

Shaw, N., M. Bradley. 2014. Cape Cod water surface elevation for 60cm, 1m & 2m sea level rise. Cape Cod National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215262 (91, collaborative)

Shaw, N., M. Bradley. 2014. Colonial MHHW-NAVD88 conversion surface. Colonial National Historical Park. https://irma.nps.gov/DataStore/Reference/Profile/2215276 (91, collaborative)

Shaw, N., M. Bradley. 2014. Colonial sentinel sites. Colonial National Historic Park. https://irma.nps.gov/DataStore/Reference/Profile/2216312 (91, collaborative)

Shaw, N., M. Bradley. 2014. Colonial SLOSH category 1-4 inundation polygons. Colonial National Historical Park. https://irma.nps.gov/DataStore/Reference/Profile/2215268 (91, collaborative)

Shaw, N., M. Bradley. 2014. Colonial SLOSH category 1-4 storm surge points. Colonial National Historical Park. https://irma.nps.gov/DataStore/Reference/Profile/2215265 (91, collaborative)

Shaw, N., M. Bradley. 2014. Colonial water depths for 60cm, 1m & 2m sea level rise. Colonial National Historical Park. https://irma.nps.gov/DataStore/Reference/Profile/2215270 (91, collaborative)

Shaw, N., M. Bradley. 2014. Colonial water surface elevations for 60cm, 1m & 2m sea level rise. Colonial National Historical Park. https://irma.nps.gov/DataStore/Reference/Profile/2215274 (91, collaborative)

Shaw, N., M. Bradley. 2014. Fire Island MHHW-NAVD88 conversion surface. Fire Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215280 (91, collaborative)

Shaw, N., M. Bradley. 2014. Fire Island sentinel sites. Fire Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2216313 (91)

Shaw, N., M. Bradley. 2014. Fire Island SLOSH category 1-4 inundation polygons. Fire Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215291 (91, collaborative)

Shaw, N., M. Bradley. 2014. Fire Island SLOSH category 1-4 storm surge points. Fire Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215285 (91)

Shaw, N., M. Bradley. 2014. Fire Island water depths for 60cm, 1m & 2m sea level rise. Fire Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215294 (91, collaborative)

Shaw, N., M. Bradley. 2014. Fire Island water surface elevations for 60cm, 1m & 2m sea level rise. Fire Island National Seashore. https://irma.nps.gov/DataStore/Reference/Profile/2215295 (91, collaborative)

Shaw, N., M. Bradley. 2014. Gateway MHHW-NAVD88 conversion surface. Gateway National Recreation Area https://irma.nps.gov/DataStore/reference/profile/2215303 (91, collaborative)

Shaw, N., M. Bradley. 2014. Gateway sentinel sites. Gateway National Recreation Area. https://irma.nps.gov/DataStore/Reference/Profile/2216314 (91, collaborative)

Shaw, N., M. Bradley. 2014. Gateway SLOSH Category 1-4 inundation polygons. Gateway National Recreation Area. https://irma.nps.gov/DataStore/Reference/Profile/2215302 (91, collaborative)

Shaw, N., M. Bradley. 2014. Gateway SLOSH category 1-4 storm surge points. Gateway National Recreation Area. https://irma.nps.gov/DataStore/Reference/Profile/2215299 (91, collaborative)

Shaw, N., M. Bradley. 2014. Gateway surface elevations for 60cm, 1m & 2m sea level rise. Gateway National Recreation Area. https://irma.nps.gov/DataStore/Reference/Profile/2215297 (91, collaborative)

Shaw, N., M. Bradley. 2014. Gateway water depths for 60cm, 1m & 2m sea level rise. Gateway National Recreation Area. https://irma.nps.gov/DataStore/Reference/Profile/2215305 (91, collaborative)

Shaw, N., M. Bradley. 2014. George Washington Birthplace MHHW-NAVD88 conversion surface. George Washington Birthplace National Monument. https://irma.nps.gov/DataStore/Reference/Profile/2215482 (91, collaborative)

Shaw, N., M. Bradley. 2014. George Washington Birthplace sentinel sites. George Washington Birthplace National Monument. https://irma.nps.gov/DataStore/Reference/Profile/2216315 (91, collaborative)

Shaw, N., M. Bradley. 2014. George Washington Birthplace SLOSH category 1-4 inundation polygons. George Washington Birthplace National Monument. https://irma.nps.gov/DataStore/Reference/Profile/2215483 (91, collaborative)

Shaw, N., M. Bradley. 2014. George Washington Birthplace SLOSH category 1-4 storm surge points. George Washington Birthplace National Monument. https://irma.nps.gov/DataStore/Reference/Profile/2215484 (91, collaborative)

Shaw, N., M. Bradley. 2014. George Washington Birthplace water surface elevations for 60cm, 1m & 2m sea level rise. George Washington Birthplace National Monument. https://irma.nps.gov/DataStore/Reference/Profile/2215486 (91, collaborative)

Shaw, N., M. Bradley. 2014. George Washington Birthplace water depths for 60cm, 1m & 2m sea level rise. George Washington Birthplace National Monument. https://irma.nps.gov/DataStore/Reference/Profile/2215485 (91, collaborative)

Shaw, N., M. Bradley. 2014. sentinel sites for all Parks in the Northeast Region. NPS Northeast Region. https://irma.nps.gov/DataStore/Reference/Profile/2216317 (91, collaborative)

Unpublished digital post-Hurricane Sandy geomorphological map of Fire Island National Seashore and vicinity, New York (NPS, GRD, GRI, FIIS, FIIS post-Hurricane Sandy digital map). 2015. Adapted from a Rutgers University, Institute of Marine and Coastal Sciences map by Psuty, N., W. Schmelz, J. Greenberg, A. Spahn. National Park Service (NPS) Geologic Resources Inventory (GRI) program https://irma.nps.gov/DataStore/Reference/Profile/2229136 (20)

Internet Media: Websites, Webinars, and Blog posts *(44 products)*

Assateague Island National Seashore participates in Hurricane Sandy projects: https://www.nps.gov/asis/learn/news/assateague-island-national-seashore-participates-in-hurricane-sandy-projects.htm. (88)

Assateague Island National Seashore (ASIS) post-Hurricane Sandy data surveys http://edc.maps.arcgis.com/apps/MapTour/index.html?appid=c868a3f717a9486badabf36a07c94db5&webmap=4827ebbe15ec40828195423d274ba240 (90)

Bat surveys commence again at Cape Cod National Seashore this fall. National Park Service. September 10, 2018 https://www.nps.gov/caco/learn/news/go-batty-2018.htm (48, 49)

Benthic habitat mapping. Center for Coastal Studies, Provincetown, MA. http://coastalstudies.org/marine-geology/benthic-habitat-mapping/ (15)

Campbell, A. 2015. GeoScript: VDatum to convert LAS data into MHW. https://www.edc.edu/blog/vdatum-convert-las-data-mhw-vertical-datum.

Campbell, A. Saltmarsh change analysis of Jamaica Bay with satellite imagery. Research of Jamaica Bay Webinar Series. November 15, 2018. http://www.srijb.org/jbwebinarseries/ (105)

Center for Cultural Landscape Preservation, State University of New York– College of Environmental Science and Forestry, Syracuse, NY. https://www.esf.edu/cclp/research.htm (36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46)

Color ramp. https://www.edc.uri.edu/blog/creating-custom-color-ramps-arcmap (88)

Converting GeoPDFs to GeoTIFFs Using GDAL, Using the field calculator to edit strings in the attribute table, using LAS datasets to create functional outputs. Blog post. https://www.edc.uri.edu/blog (88)

Designing the Parks – Connor Neville https://designingtheparksoclp.wordpress.com/bios/2018-2/connor-neville/ (46)

Digital elevation model. http://www.edc.uri.edu/blog/visualizing-topobathy-digital-elevation-models-dems (88)

Dragonfly Mercury Project. https://www.nps.gov/articles/dragonfly-mercury-project.htm (71)

Dragonfly Mercury Project data. https://www.nps.gov/articles/dragonflymercury-map.htm (71)

Dragonfly Mercury project preliminary results and plan for sampling. Webinar presented to ~100+ National Park Service staff and project participants regarding ongoing dragonfly mercury research. May 3, 2017. (71)

Dragonfly Mercury Project preliminary results and plan for sampling. Webinar presented to ~100+ National Park Service staff and project participants regarding ongoing dragonfly mercury research. May 23, 2018. (71)

Environmental Data Center. Our Blog. University of Rhode Island. https://www.edc.uri.edu/blog (88, collaborative)

Flagg, C. The continuing evolution of the New Inlet. December 12, 2013 report. http://po.msrc.sunysb.edu/GSB/Inlet_Report_10.pdf (59)

Flagg, C. The continuing evolution of the Old Inlet Breach. October 20, 2014 report. http://po.msrc.sunysb.edu/GSB/Inlet_Report_11.pdf (59)

Flagg, C. Update on the Old Inlet Breach and Great South Bay. January 9, 2015 report. http://po.msrc.sunysb.edu/GSB/Inlet_Report_12.pdf (59)

Flagg, C. Update on the Old Inlet Breach and Great South Bay. August 7, 2015 report. http://po.msrc.sunysb.edu/GSB/Inlet_Report_14.pdf (59)

Flagg, C. Developments at the Old Inlet Breach and Great South Bay during 2015. March 16, 2016 report. http://po.msrc.sunysb.edu/GSB/Inlet_Report_15.pdf (59)

Flagg, C. Update on the status of the Old Inlet Breach. September 16, 2016 report. http://po.msrc.sunysb.edu/GSB/Inlet_Report_16.pdf (59)

Flagg, C., R. Wilson, C. Hinrichs, T. Wilson. The Great South Bay Project http://po.msrc.sunysb.edu/GSB/ (59)

Geomorphological Mapping. Sandy Hook Cooperative Research Programs. https://marine.rutgers.edu/geomorph/geomorph/_pages/geomorph_maps.html (20)

HIFLD ArcGIS online open data, http://www.edc.uri.edu/blog/hifld-arcgis-online-open-data-site (88)

Hurricane Sandy-Six months later: https://www.nps.gov/gate/learn/news/jamaica-sandy-6.htm. (88)

Hurricane Sandy: NPS elevation mapping project http://www.edc.uri.edu/initiatives/hurricane-sandy-nps-elevation-mapping-project (88)

Hurricane Sandy web mapping application near ASIS, FIIS, GATE: http://www.edc.uri.edu/sandy/nps. (88)

Identifying late summer activities and habitat preference of remnant populations of *Myotis* bats in Acadia National Park, Maine. http://www.briloon.org/myotis-bats-in-acadia-national-park (1)

Jamaica Bay Water quality data visualization and access tool, http://beta.www.ciesin.columbia.edu/jbwq/ (4)

Jamaica Bay water quality: site locations: http://columbia.maps.arcgis.com/apps/Viewer/index.html?appid=0f510f1e26b748b9b14a66357e9a23ca. (4)

Managing geospatial data and sharing maps for coastal storm preparedness and response. Webinar. September 16, 2015. (88)

Mapping the Unseen. Graduate School of Oceanography, University of Rhode Island website: URI Today, Office of External Relations and Communications, News and Events website. July 20, 2015: https://today.uri.edu/news/uri-researchers-map-submerged-areas-of-fire-island-national-seashore-to-monitor-changing-habitats/ (99) (99)

Nordstrom, K.F., A. L. Babson. Exploring the climate adaptation strategy of removing shore protection structures to facilitate migration of coastal landforms and habitats for Northeast Region parks. Climate Change in America's National Parks webinar series, December 8, 2016. (collaborative)

NYC Environmental Protection. Urban resilience in an era of climate change: Global input for local solutions. http://www.nyc.gov/html/dep/html/harborwater/jamaica_bay_urban_resilience.shtml (7)

Old Inlet Breach- kml file for Google Earth to see how the inlet is changing with time. http://wx-.somassbu.org/products/kml/OldInletBreach.kml (59)

Patton, S. Reflections on the 2017 National Council on Public History Conference. Blog Post, May 5, 2017. https://umasshistory.wordpress.com/2017/05/05/reflections-on-the-2017-national-council-on-public-history-conference/ (83)

Post-hurricane sandy salt marsh change detection and development of salt marsh change detection protocol for the northeast coastal parks. 2015. http://web.uri.edu/ltrs/post-hurricane-sandy-salt-marsh/. (105)

Psuty, N. K. Ames, A. Habeck, G. Liu. Geomorphological restoration and resilience: Jamaica Bay Unit, GATE. 2018. Gateway National Recreation Area Webinar Series. October 18, 2018. (28)

Sanderson, E., S. Allred, M. Meixler. 2014 Visionmaker Jamaica Bay: Analysis of community-generated adapted strategies to enhance resilient ecosystems in Jamaica Bay Post-Hurricane Sandy, New York. http://www.srijb.org/2014/10/24/visionmaker-Jamaica-bay/ (7)

SEA Space Marine Discovery Center, Center for Coastal Studies, Provincetown, MA. http://coastalstudies.org/about/sea-space-marine-discovery-center/ (15)

Seafloor mapping, Center for Coastal Studies, Provincetown, MA. http://coastalstudies.org/marine-geology/seafloor-mapping/ (15)

URI researchers map ocean floor, underwater habitats on Atlantic coast following Hurricane Sandy. Posted November 9, 2016. University of Rhode Island News and Events website. https://today.uri.edu/news/uri-researchers-map-ocean-floor-underwater-habitats-on-atlantic-coast-following-hurricane-sandy/ (99)

Workflow simplification using ArcGIS Pro Tasks. https://www.edc.uri.edu/blog/workflow-simplification-using-arcgis-pro-tasks (88)

Other Outreach *(8 products)*

3-Minute Thesis Competition, S. Patton, finalist. University of Massachusetts-Amherst, MA. March 2017. (83)

Citizen Scientists: Over 4,000 citizen scientists have participated in the Dragon Fly Project (71)

Exhibited GPS equipment to public at 40th Anniversary of the Research Vessel Endeavor, Open House. Narragansett, RI. September 10, 2016. (88)

GRRL Tech workshop. Outreach for female high school students to participate in STEM-focused workshops. March 2015. (99)

GRRL Tech workshop. Outreach for female high school students to participate in STEM-focused workshops. March 2016. (99)

SEA Space Marine Discovery Center at Provincetown Center for Coastal Studies. Open House. June 28-Sept 5, 2015. 116 participants in "Get to the Bottom of it" (children ages 5-12). Program highlights significant of benthic organisms to local marine ecosystems (15)

Sea Space Public kiosk near MacMillan Wharf (Provincetown, MA) – multi-media outreach on submerged mapping. Over 1400 people educated in project in 2016. (15)

SUNY-ESF Facebook page: FIIS deer and vegetation. https://www.facebook.com/sunyesf/photos/a.93546400874.87021.88263740874/10153142559845875/?type=3&theater (57)

Wilderness Breach, Fire Island National Seashore, June 1, 2016 — Charles Flagg

American Bullfrog — Anne Devan-Song

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