

Partnership for the Environment

National Park Service contributions
to the University of Rhode Island
2020 Summary



THE
UNIVERSITY
OF RHODE ISLAND

Organization

Cover photo credit: National Park Service

The National Park Service (NPS) staff who are duty stationed at the University of Rhode Island (URI) represent four distinct, but interrelated, programs: the NPS Research Coordinator for the North Atlantic Coast Cooperative Ecosystem Studies Unit (NAC-CESU), the Northeast Coastal and Barrier Network (NCBN) Inventory and Monitoring Division, the Climate Change Response Program, and the NPS Water Resources Division. In addition, NPS regional staff administers funding and oversees projects for URI's Field Technical Support Center (FTSC).

The relationship between NPS and URI also draws students and visiting researchers to campus, such as Kelly Medeiros from Cape Cod National Seashore, who was a recent Masters of Environmental Science and Management student, and Bill Gawley from Acadia National Park who was temporarily stationed at URI in 2014 as acting coordinator of the NPS Natural Resource Condition Assessments (Fig. 1).

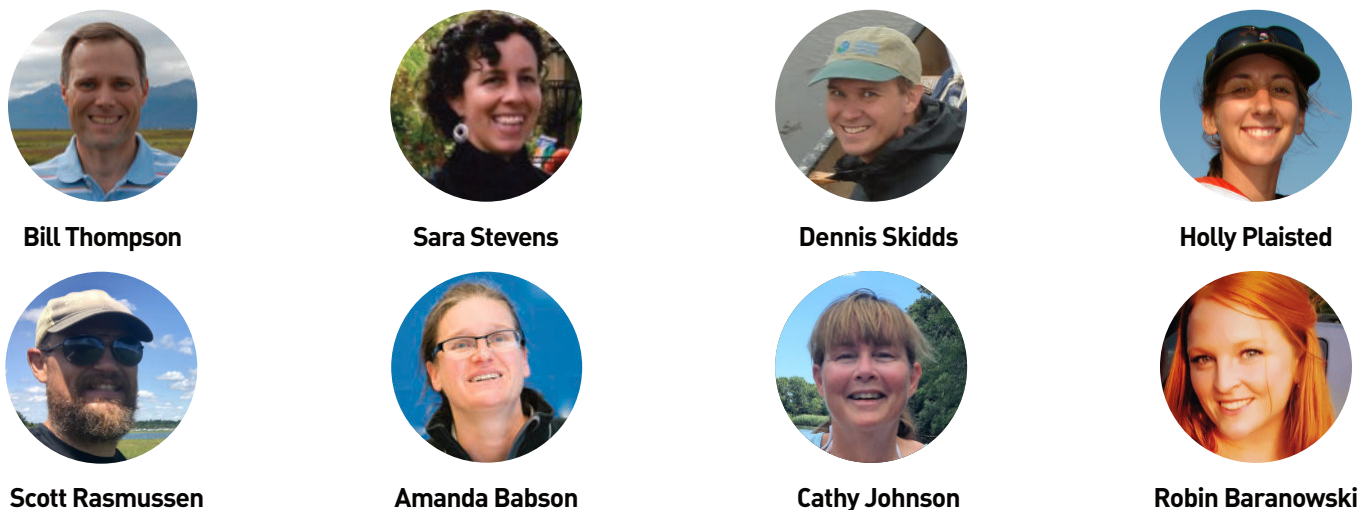
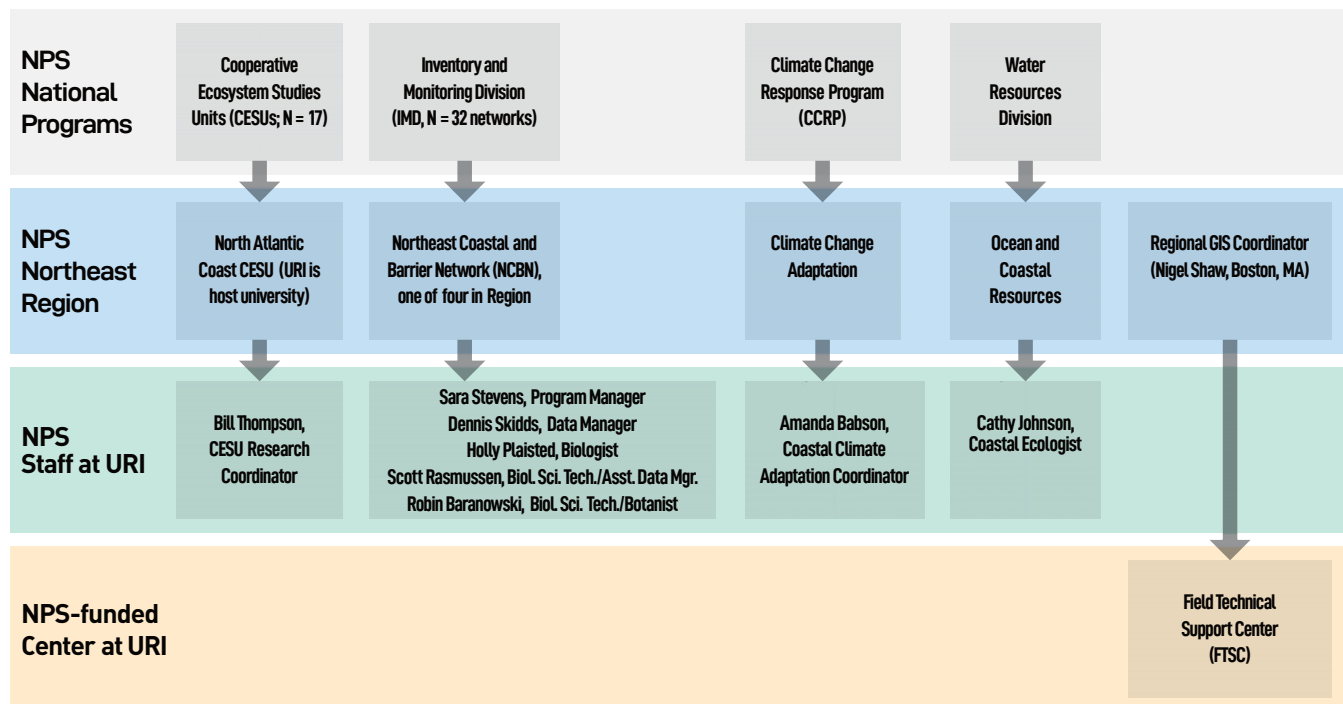


Figure 1. National Park Service (NPS) programs and staff associated with URI.





Coastal National Parks in the Northeast are comprised of some of the more pristine salt marsh habitat in the world, but managers are facing its increasingly rapid loss to accelerated rates of sea-level rise and other contributing factors related to human influences. As the frequency and power of coastal storms increase due to climate change, the value and importance of these natural buffer and protective areas will continue to rise, and protection and mitigation of this key resource are vital.

Photo Credit: Robin Baranowski / NPS





The Cooperative Ecosystem Studies Units (CESU) Network is a consortium of more than 400 partners—including federal agencies, tribes, academic institutions, state and local government agencies, nonprofit, nongovernmental organizations, and other partners—who work collaboratively to support natural and cultural resource stewardship at multiple scales. This consortium is one of the largest of its kind in the United States.

The NAC-CESU is one of 17 across the United States, and its host institution is the University of Rhode Island, with the director of the Coastal Institute identified as the director of the NAC-CESU. This unit engages federal scientists and managers, in collaboration with academic and other non-federal scientists and students, to understand how fundamental ecosystem functions and processes are affected by increasing urban development, climate change, and other stressors. These findings are used to devise management strategies for preserving and restoring coastal and terrestrial ecosystems, cultural resources, and maritime heritage.

Dr. Bill Thompson became NPS's NAC-CESU Research Coordinator in December 2016, replacing Dr. Charles Roman, who retired in February 2016. Bill is located in the Coastal Institute Building on URI's Bay Campus. He was awarded Adjunct Graduate Faculty status in March 2017, and taught a Directed Studies course (NRS 592), Designing Biological Monitoring Programs, in Spring 2018. He will be teaching another Directed Studies course (NRS 592), in Spring 2021.

As the Research Coordinator, Bill also serves as the intermediary between NPS regional financial staff and other NPS staff and partners in the creation of CESU financial assistance agreements; seeks to leverage funds, staffing, and technical capacity between NPS and partners in addressing shared research issues and needs; and provides technical assistance to park staffs and university students, faculty and staff.

More than \$13 million of URI projects have been funded through the NAC-CESU since its inception in 1999. These projects contributed to 51 graduate theses and dissertations, as well as 111 publications (Table 1).

Northeast Coastal and Barrier Network, Inventory and Monitoring Division

NPS's Inventory and Monitoring Division (IMD) is a national program comprised of 32 inventory and monitoring (I&M) networks across the country, including the Northeast Coastal and Barrier Network (NCBN; Fig. 2) that has staff stationed at URI. NPS's IMD provides critical information to parks and the public about the health of park landscapes, ecosystems, and species.



Photo credit: Erica Rocks / NPS

The program was established to ensure that park managers have high quality, scientifically-based information to protect and manage parks. This information enables managers to take management action before serious ecosystem damage occurs. This long-term program has two components: the gathering of baseline information about park natural resources through 12 “core inventories” and the development and implementation of the Vital Signs Monitoring Program. Park vital signs are defined as key physical, chemical, and biological elements and processes of park ecosystems. These can include the condition of water, air, geologic resources, plants and animals, as well as the ecological, biological, and physical processes at work in parks.

NCBN includes eight parks located along the Atlantic seaboard, from Colonial National Historical Park in Virginia to Cape Cod National Seashore in Massachusetts. NCBN personnel work with park staff and regional scientists to design, develop, and implement a Vital Signs Monitoring Program in the eight network parks. Data collected from each

monitoring project are summarized annually and provided to park resource management staff. Multiple year data are analyzed for trends, and status reports are provided to each park.

The NCBN staff, located in the Coastal Institute Building on the URI Kingston Campus, have provided substantial value to URI through funding projects with faculty (Table 2, recent projects); supporting one undergraduate student, two graduate students, and ten research assistants in these projects; teaching undergraduate and graduate classes (Table 3); and providing assistance and training to students on resume building and the federal job application process.

NCBN Program Manager and Biologist, Sara Stevens, has administered over \$5 million in scientific studies based in National Parks to the University of Rhode Island, and has served as the main contact for principal investigators on Department of Interior projects related to Hurricane Sandy in the Northeast Region. Sara teaches Applied Coastal Ecology (NRS

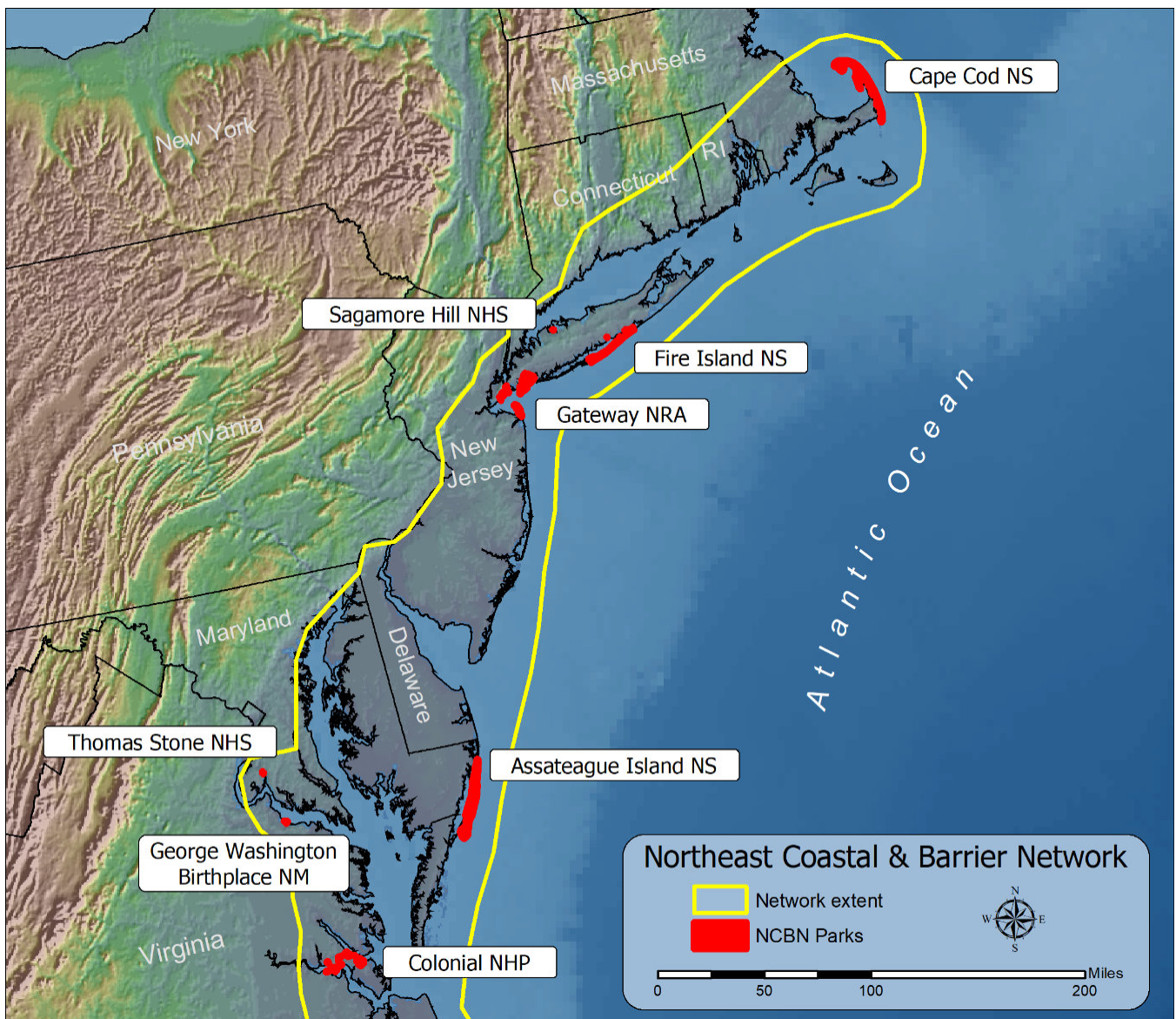


Figure 2. National Park Service units comprising the Northeast Coastal and Barrier Network.

555), and mentors undergraduates—both as a guest lecturer and through year-round one-on-one office hours. She assists URI undergraduate students with identifying current opportunities for employment and internships within the National Park Service, and completing a successful federal employment application and resume. Sara’s work as a federal employee in the sciences provides URI students with two important services: 1) a unique opportunity to receive one-on-one support and guidance regarding employment as a scientist in the national parks, and 2) the benefit of her broad knowledge, experience, and connections working with a diverse group of scientists, universities, and park staff in the Northeast allows her to support and advise students on a wide range of scientific projects.

NCBN Data Manager and Biologist, Dennis Skidds, teaches a course at URI on Advanced Spatial Analysis. The final project for this course entails a three-day field trip to one of the National Parks in the Northeast to collect hands-on data, which the students analyze and provide directly to the park managers. As a database developer for the NPS, Dennis supports a wide range of graduate students and faculty in database design and review.

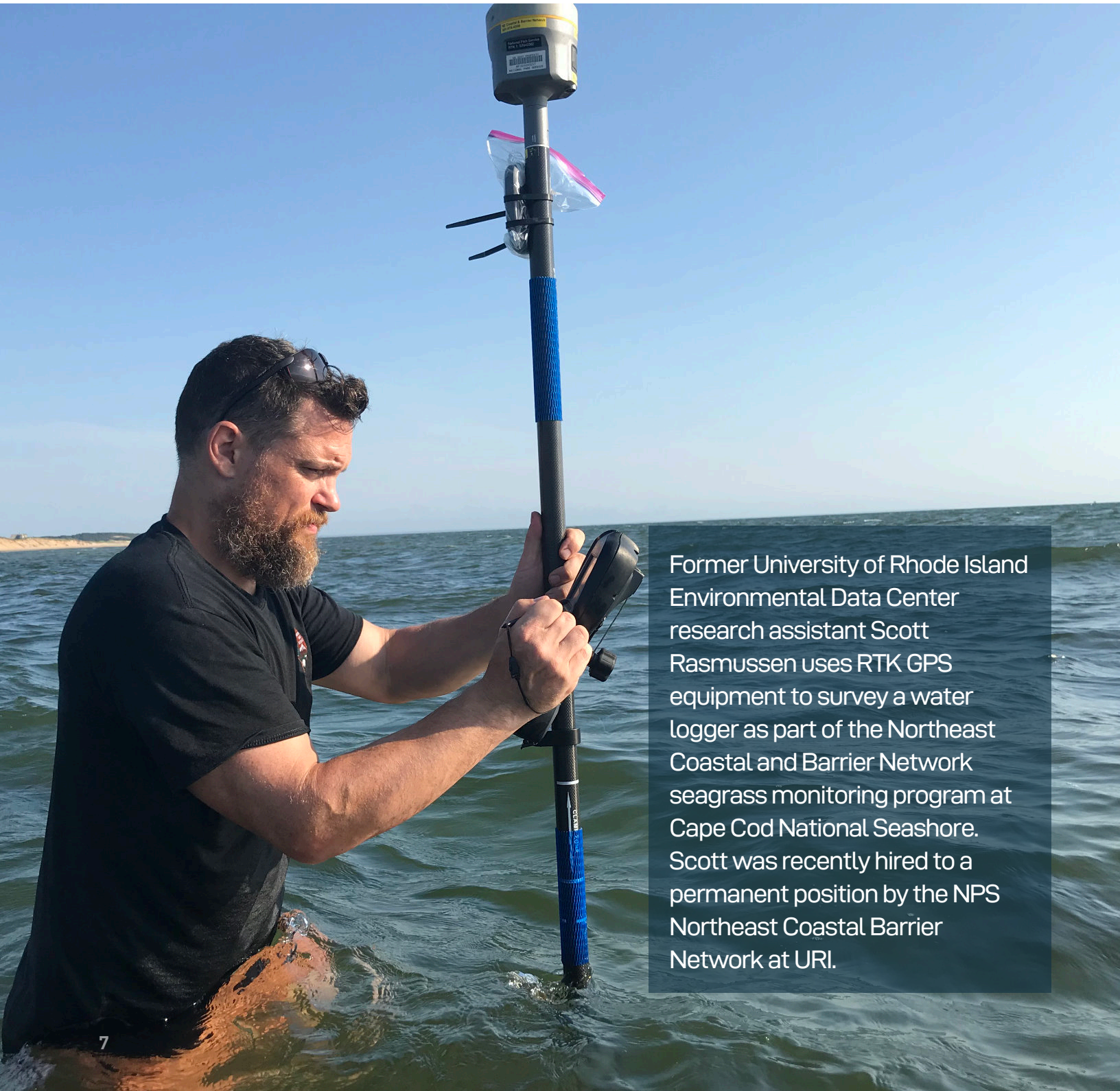
Holly Plaisted is the NCBN estuarine water quality and Seagrass Ecologist. New to the NCBN team, Holly is available to mentor both URI undergraduate and graduate students in multiple topics related to coastal systems, as well as provide support to those students interested in working as a scientist for the National

Park Service. Holly will be co-teaching Applied Coastal Ecology (NRS 555) with Sara Stevens.

Scott Rasmussen is the NCBN Assistant Data Manager and Biological Technician. Recently hired into this position with NPS, Scott previously worked as the lead field scientist for RI salt marsh monitoring and habitat restoration projects at the URI Environmental Data Center.

Robin Baranowski, a Biological Science Technician and Botanist for the NCBN, teaches Botany and Taxonomy (BIO 323) in the summer and fall semesters. This four-credit course is an important part of the NRS and BIO undergraduate curriculum. In addition, as a plant taxonomist, she has supported many URI graduate student projects by providing plant identification and field assistance.

Photo credit: National Park Service



Former University of Rhode Island Environmental Data Center research assistant Scott Rasmussen uses RTK GPS equipment to survey a water logger as part of the Northeast Coastal and Barrier Network seagrass monitoring program at Cape Cod National Seashore. Scott was recently hired to a permanent position by the NPS Northeast Coastal Barrier Network at URI.

Table 1. URI Projects funded through the NAC-CESU during 1999-2018.

Year Block	#Projects	#Dissertations/Theses	#Pubs	Total Project Cost
1999-2003	18	8	6	\$ 1,122,434
2004-2008	61	10	19	\$ 3,396,446
2009-2013	29	5	33	\$ 4,179,215
2014-2018	18	28	53	\$ 4,486,135
Total	126	51	111	\$ 13,184,230

Table 2. National Park Service-Northeast Coastal and Barrier Network projects during 2014-2018.

Project Short Title	Funding	PI
Quick Methodology update for monitoring Salt Marsh Landscape Change (contribution)-(FIIS, GATE, ASIS)	\$ 200,000	Y.Q. Wang
Science Communication	\$ 177,761	C. Druschke
Storm Data, Sea level rise, Salt Marsh Modeling, GIS Support	\$ 1,334,586	P. August
Herpetological Monitoring-Coastal National Parks	\$ 419,004	N. Karraker
Subtotal (NRS Department)	\$ 2,131,351	
Submerged Habitat Mapping-Fire Island National Seashore	\$ 1,109,600	J. King
Historical Commercial Landscape Inventory	\$ 21,000	M. Jensen
Subtotal (Other URI Colleges/Departments)	\$ 1,130,600	
TOTAL	\$ 3,261,951	

Table 3. URI courses taught by current or former National Park Service NCBN staff.

Course Description	Instructor
Applied Coastal Ecology (NRS 555) - 2 credits/Spring (biennial)	Sara Stevens/Holly Plaisted
Application of Advanced Spatial Analysis (NRS 524) - 2 credits/Spring (biennial)	Dennis Skidds
Field Botany and Taxonomy (BIO 323; Summer, Fall) - 4 credits (annual)	Robin Baranowski
Quantitative Techniques in Natural Resource Research (NRS 520/EEC 524) - 3 Credits (annual) during 2010-2013	Penelope Pooler (formerly NCBN)

Climate Change Response Program

The NPS Climate Change Response Program (CCRP) advances efforts to address the effects of climate change in national parks. This national program supports parks through technical expertise and research, guidance and training, project support, and educational products. The program works across directorates, program areas and regions, including the Northeast Region.

Fire Island National Seashore/Photo credit: John Vahey

As the Northeast Region’s Coastal Climate Adaptation Coordinator, supported by CCRP, Dr. Amanda Babson leads science and resource management efforts related to climate change adaptation for coastal national parks. She has been duty stationed at the URI Coastal Institute on the URI Narragansett Bay Campus since the creation of her position in 2011. Her collaborations with URI researchers (Table 4) on climate change vulnerability assessments and on sea level rise and tide gauge analysis have involved mentoring three interns at URI (one funded by NPS,

two funded by the Summer Undergraduate Research Fellowship in Oceanography), and working with two graduate students whose committees she has served on (one Masters of Environmental Science and Management, and one current Department of Marine Affairs). She contributes towards URI outreach efforts including URI Coastal Career Day, Metcalf Institute Peter B. Lord Seminar on the Environment, Graduate School of Oceanography Open House and Quahog Bowl.

Table 4. National Park Service—Climate change projects during 2014-2018.

Project Short Title	Funding	PI
NPS Park Vulnerability Assessments and Facilities Adaptation	\$ 350,169	G. Ricci, D. Robadue
Climate change impacts on Nor'easter vulnerability	\$ 268,290	I. Ginis
Total	\$ 618,459	

Water Resources Division

The NPS Water Resources Division works to conserve, protect and restore aquatic resources in national parks. The Ocean and Coastal Resources Program supports the advancement of ocean and coastal stewardship through technical assistance to parks, research support and work with partners to enhance our understanding of park marine and coastal resources.

Photo credit: Robin Baranowski / NPS

Dr. Cathy Johnson became NPS's Northeast Region Coastal Ecologist in April 2019, and is located in the Coastal Institute Building on URI's Bay Campus. As the regional Coastal Ecologist supported by the WRD, Cathy will be providing technical assistance to the coastal parks in the Northeast, leveraging funding, and facilitating partnerships with state and federal agencies, academic institutions, and local organizations to address ecological questions and issues of mutual interest to the parks and partners. Part of that technical support role includes providing relevant and up-to-date science to parks to inform planning and management and facilitating research to address threats to the ecological integrity of coastal parks in the region. As an affiliate graduate faculty member with URI, Cathy plans to teach a graduate-level seminar course focused on environmental policy and planning. She looks forward to mentoring graduate and undergraduate students at URI and engaging with researchers and other partners to address the ever-increasing challenges facing coastal ecosystems and communities.



Photo credit: Robin Baranowski / NPS

Field Technical Support Center

NCBN 2018 Geoscientists-in-the-Parks Intern, and University of Rhode Island recent graduate, Krista Noe, recording data at Assateague Island National Seashore as a member of the Network's salt marsh monitoring field crew collecting both vegetation and nekton data.

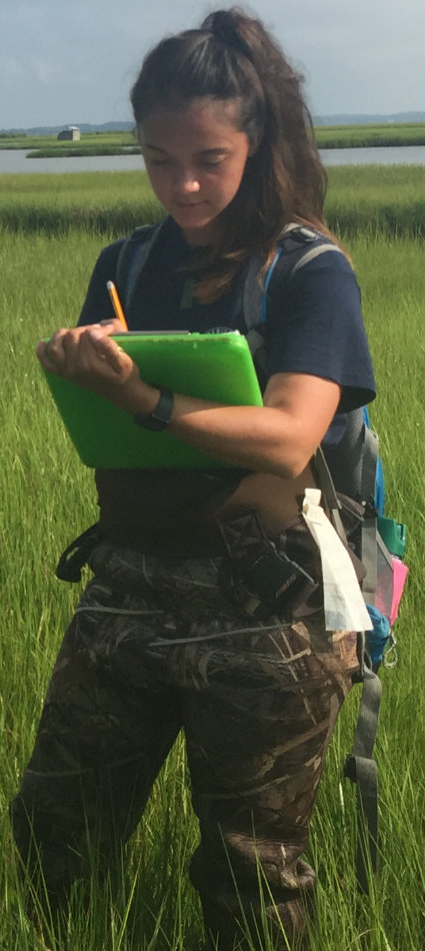


Photo credit: NPS

In 1996, URI competed for and was awarded funding by NPS to provide GIS support and training to national parks in the NPS Northeast Region. The program is called the Field Technical Support Center (FTSC) and is administered by the NPS GIS manager for the Northeast Region, Nigel Shaw. NPS has provided \$75,000 per year in annual base funding to FTSC since 1997. Additional projects are given to URI's Environmental Data Center that yield more funds. NPS has provided approximately \$1.8 million to FTSC to support its activities since 1997.

FTSC projects cover much of the salary for RA-IV Roland Duhaime in the Environmental Data Center. Approximately ten URI undergraduate and fifteen graduate students have been supported by FTSC projects and applications. NPS NCBN Data Manager Dennis Skidds teaches an advanced GPS data collection class (NRS 524) every other year.

Elizabeth Shadle (URI) was awarded a Coastal Fellowship to study patterns in road kills across Colonial National Historical Park in Virginia to identify “hotspots” where many vehicle strikes occur. NPS funded Elizabeth’s fellowship through an agreement awarded to Dr. Nancy Karraker, professor in URI’s College of Environmental and Life Sciences (CELS), Department of Natural Resources Science (NRS), who oversees the inventory and research.



Photo credit: John Lee / NPS

Graduate students from the URI NRS Department prepare to visit Cape Cod National Seashore where they assist with mapping key resources as part the capstone field trip for NRS 524, a class co-taught by NPS employees Nigel Shaw and Dennis Skidds in 2018.

Photo credit: Dennis Skidds / NPS

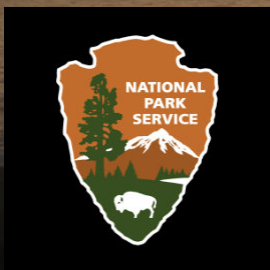


The rocky coastline of Acadia National Park in Maine





Photo credit: Seth Lerman / NPS



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