

# Partnership for the Environment

National Park Service contributions  
to the University of Rhode Island

**2017** Summary



THE  
UNIVERSITY  
OF RHODE ISLAND

# Organization

Photo credit: URI Environmental Data Center  
Front cover: Charles Flagg

The National Park Service (NPS) staff who are duty stationed at the University of Rhode Island (URI) represent three 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, and the Climate Change Response Program. In addition, NPS regional staff administers funding and oversees projects for URI’s Field Technical Support Center (FTSC; Fig. 1).

The relationship between NPS and URI also draws students and visiting researchers to campus, such as Kelly Medeiros from Cape Cod National Seashore who is a current 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.



Bill Thompson



Sara Stevens



Dennis Skidds

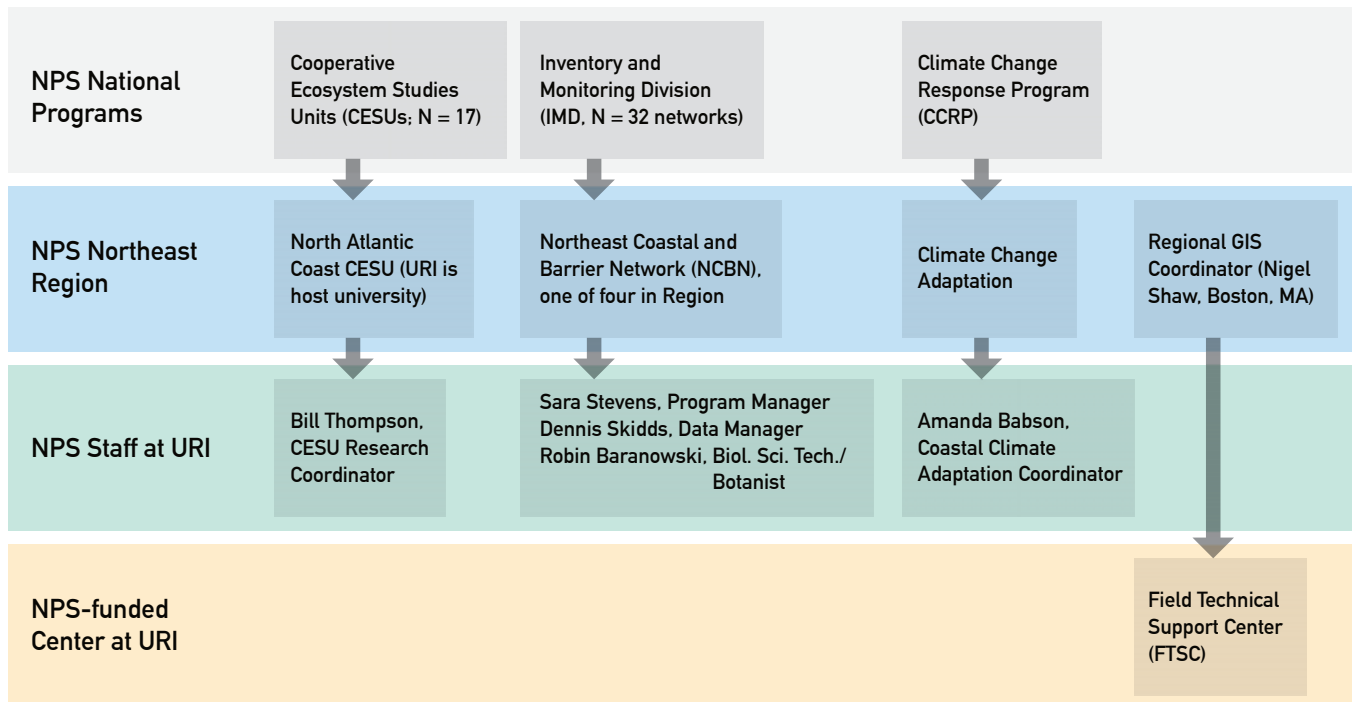


Robin Baranowski



Amanda Babson

**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 increases 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 is vital.

A piping plover stands on a sandy beach. The bird has a white head and neck with a dark cap and a dark collar around its neck. Its body is light brown and white. It has a bright orange beak and legs. A crab shell is visible on the sand near its feet. The background is a blurred beach scene with some dark rocks or debris.

# North Atlantic Coast Cooperative Ecosystem Studies Unit

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 (URI), 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 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 Kingston Campus. He was awarded Adjunct Graduate Faculty status in March 2017, and will be teaching a Directed Studies course (NRS 592), Designing Biological Monitoring Programs, in Spring 2018. 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.

During Dr. Roman's tenure, more than \$14 million of URI projects were funded through NAC-CESU financial assistance agreements, which contributed to 23 graduate dissertations and theses, as well as 67 publications (Table 1). Dr. Roman also taught Applied Coastal Ecology (NRS 555) every other Spring Semester, was the Major Professor for 3 PhD and 7 MS students, served on 42 graduate student committees, and mentored six undergraduate students.

# 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: Bill Thompson

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, and has

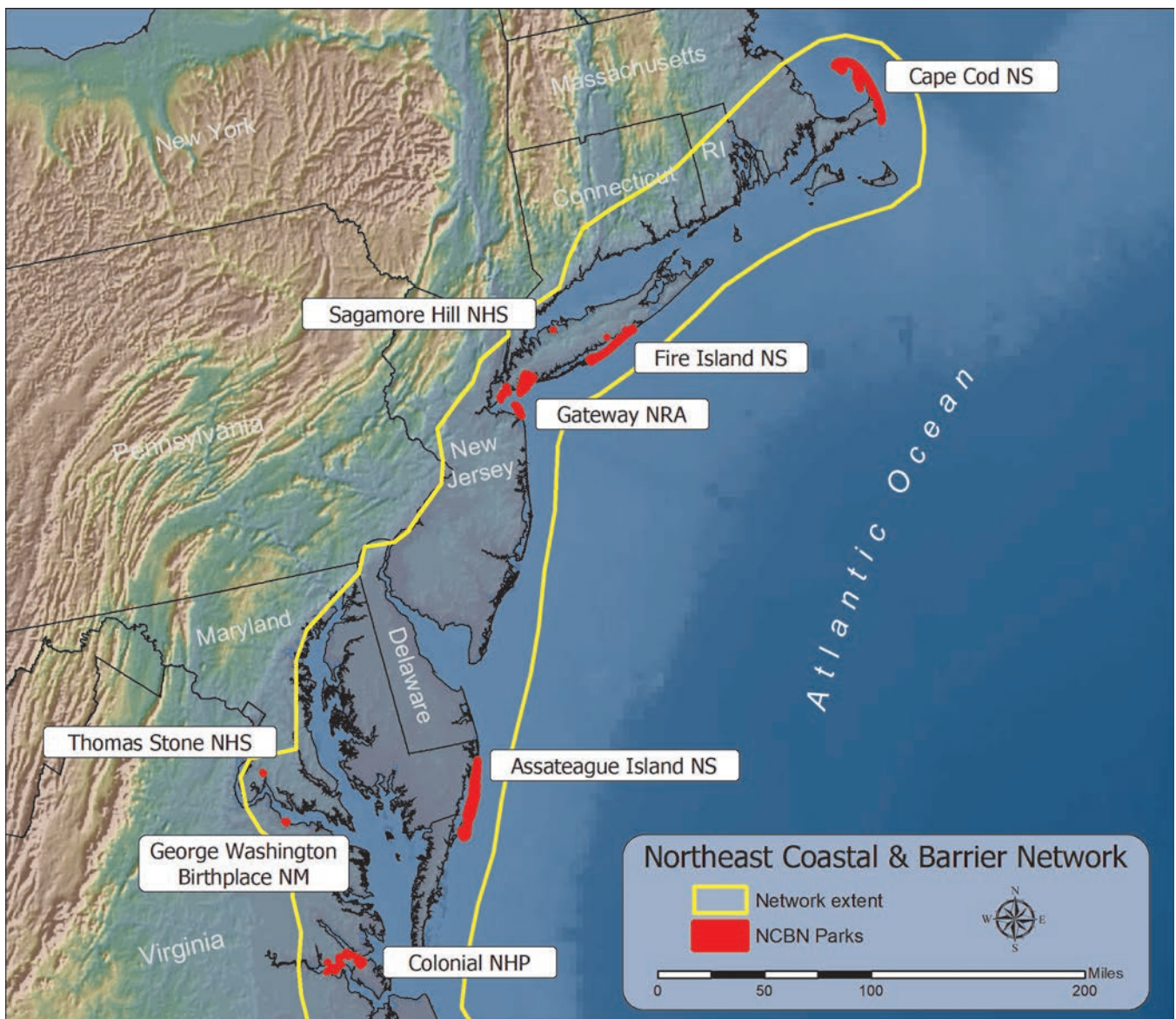


Figure 2. National Park Service units comprising the Northeast Coastal and Barrier Network.

served as the main contact for principal investigators on Department of Interior projects related to Hurricane Sandy in the Northeast Region. Sara provides mentoring—informally or through invited class time—to URI undergraduate students on current opportunities for employment and internships within the National Park Service, as well as how to complete 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 in the national parks, and 2) the benefit

of her broad knowledge and experience working with a diverse group of scientists, universities, and park staff in the Northeast allows her to support and advise students on a broad range of scientific projects.

NCBN Data Manager and Biologist, Dennis Skidds, co-teaches a course at URI on Advanced Spatial Analysis along with the NPS regional GIS Coordinator, Nigel Shaw. 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.

Robin Baranowski, a Biological Science Technician and Botanist for the NCBN, co-teaches the URI

Biological Sciences summer Field Botany course. This four-credit course is an important part of the NRS and Bio undergraduate curriculum. Robin also acts as an assistant for the fall Field Botany course, as needed. In addition, as a plant taxonomist, she has supported many URI graduate student projects by providing plant identification and field assistance.

Photo credit: URI Environmental Data Center

Former University of Rhode Island, Environmental Data Center research assistant, Andrew Neil, sets up RTK GPS equipment in preparation for a day of data collection at Fire Island National Seashore.





**Table 1. URI Projects funded through the NAC-CESU during 1999-2016.**

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
2013-2016*	15	N/A	9	\$ 5,476,598
<b>Total</b>	<b>123</b>	<b>23</b>	<b>67</b>	<b>\$ 14,174,693</b>

\*Incomplete data; includes FY13 Hurricane Sandy projects that were not in the 2009-2013 NAC-CESU self-assessment report.

**Table 2. National Park Service-Northeast Coastal and Barrier Network projects during 2013-2016.**

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	\$ 107,767	C. Druschke
Storm Data, Sea level rise, Salt Marsh Modeling, GIS Support	\$ 3,235,853	P. August
Herpetological Monitoring-Coastal National Parks	\$ 637,123	N. Karraker
<b>Subtotal (NRS Department)</b>	<b>\$ 4,180,743</b>	
Submerged Habitat Mapping-Fire Island National Seashore	\$ 1,085,000	J. King
NPS Park Condition Assessments	\$ 180,954	M. James Pirri
Historical Commercial Landscape Inventory	\$ 60,000	M. Jensen
<b>Subtotal (Other URI Colleges/Departments)</b>	<b>\$ 1,325,954</b>	
<b>TOTAL</b>	<b>\$ 5,506,697</b>	

**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)	Charles Roman/Sara Stevens
Application of Advanced Spatial Analysis (NRS 524) - 2 credits/Spring (biennial)	Dennis Skidds/Nigel Shaw (NPS Northeast Region)
Field Botany and Taxonomy (BIO 323; Summer) - 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.

Gateway National Recreation Area / Photo credit: Sarah Gulick

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, Coastal Institute Open House and Quahog Bowl.

**Table 4. National Park Service—Climate change projects during 2013-2018.**

Project Short Title	Funding	PI
NPS Park Vulnerability Assessments	\$ 205,495	D. Robadue, G. Ricci
V-Datum Analysis for NPS Sites	\$ 35,500	D. Ullman
Climate change impacts on Nor'easter vulnerability *	\$ 295,000	I. Ginis
<b>Total</b>	<b>\$ 535,995</b>	

\* Planned for FY18-20 funding, contingent on federal budget



NCBN's 2017 Geoscientists-in-the-Parks Intern and University of Rhode Island undergraduate, Lauren Zeffer, recording data at Sagamore Hill National Historic Site. Lauren is a member of the Network's salt marsh monitoring field crew and is assisting with the collection of vegetation and nekton data at Fire Island National Seashore and Sagamore Hill National Historic Site this summer.

Photo credit: Daniel Cole / NPS  
Back cover, bottom: Ryan Anderson / Stony Brook University

## Field Technical Support Center

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 Regional GIS Coordinator Nigel Shaw and NPS NCBN Data Manager Dennis Skidds teach an advanced GPS data collection class (NRS 524) every other year.



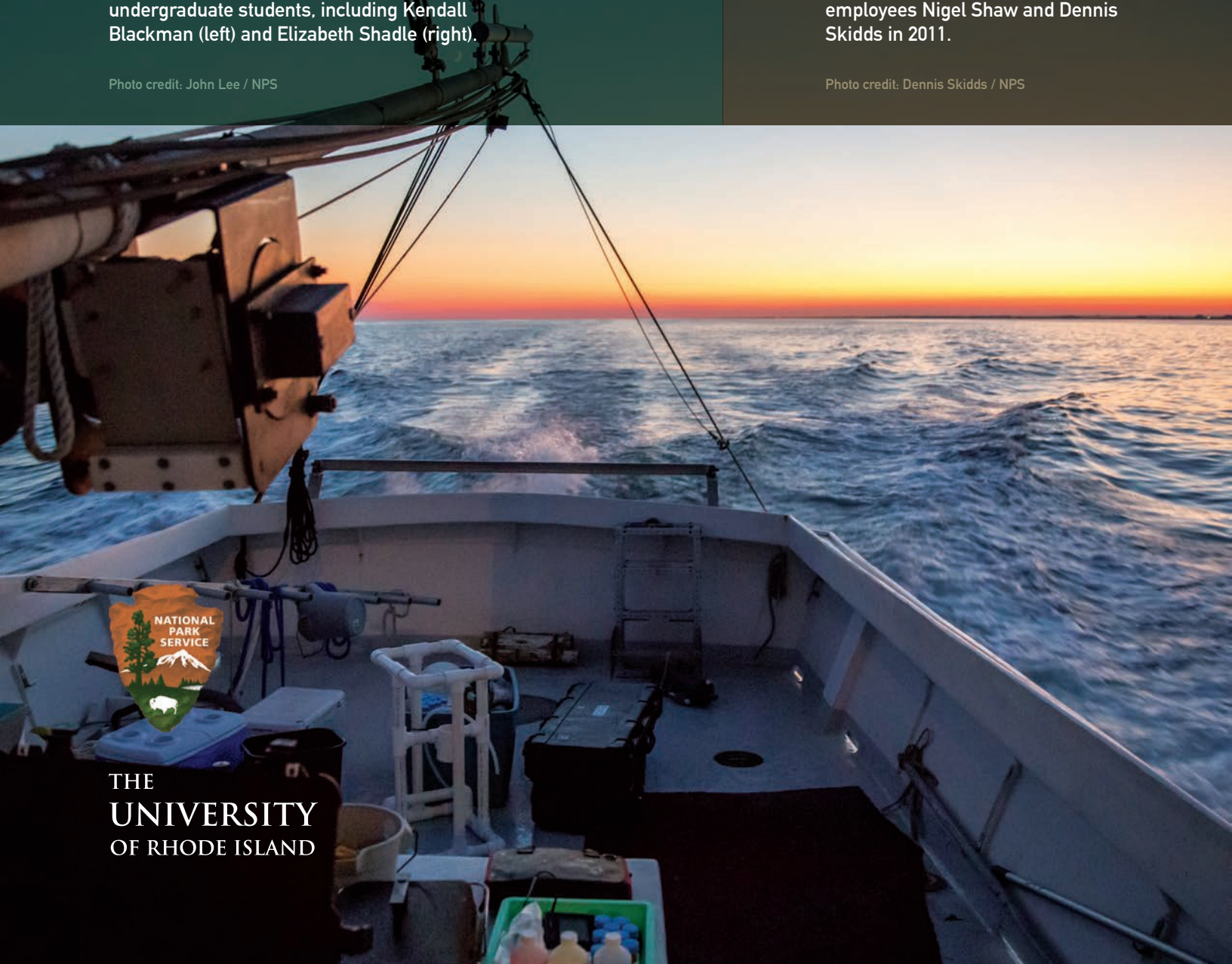
At Colonial National Historical Park in Virginia, a crew of young scientists from the University of Rhode Island is searching fields, forests, and wetlands to find as many species of amphibian and reptile as possible, as part of an intense inventory project. Under the direction of Dr. Nancy Karraker, Research Associate Anne Devan-Song (center) leads the field effort, assisted by several undergraduate students, including Kendall Blackman (left) and Elizabeth Shadle (right).

Photo credit: John Lee / NPS



University of Rhode Island, Department of Natural Resources Science graduate students Samuel Ayebare and Meghan Nightingale visit Cape Cod National Seashore to assist with mapping key resources as part of the capstone field trip for NRS 524 class, co-taught by NPS employees Nigel Shaw and Dennis Skidds in 2011.

Photo credit: Dennis Skidds / NPS



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