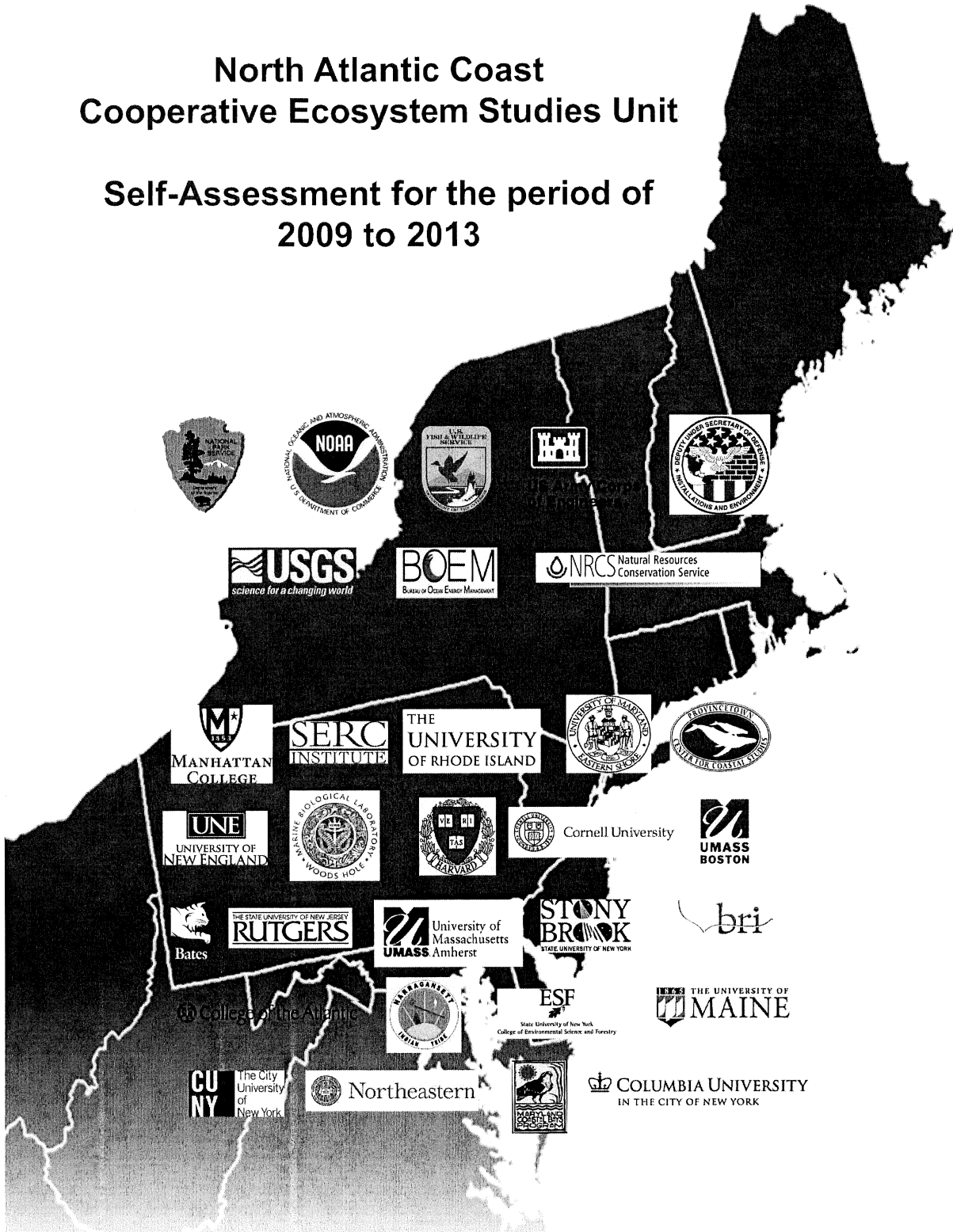


North Atlantic Coast Cooperative Ecosystem Studies Unit

Self-Assessment for the period of 2009 to 2013



NORTH ATLANTIC COAST COOPERATIVE ECOSYSTEM STUDIES UNIT

SELF-ASSESSMENT FOR THE PERIOD OF 2009 TO 2013

Non-Federal Partners

University of Rhode Island (Host University)
Bates College
Biodiversity Research Institute
City University of New York
College of the Atlantic
Columbia University
Cornell University
Harvard University
Manhattan College
Marine Biological Laboratory
Maryland Coastal Bays Program
Narragansett Indian Tribal Historic Preservation Office
Northeastern University
Provincetown Center for Coastal Studies
Rutgers – The State University of New Jersey
Schoodic Education and Research Center
State University of New York – College of Environmental Science and Forestry
Stony Brook University
University of Maine
University of Maryland – Eastern Shore
University of Massachusetts- Amherst
University of Massachusetts- Boston
University of New England

Federal Agency Partners

Bureau of Ocean Energy Management
National Oceanic and Atmospheric Administration
National Park Service
Natural Resources Conservation Service
U.S. Army Corps of Engineers
U.S. Department of Defense
U.S. Fish and Wildlife Service
U.S. Geological Survey

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Introduction:

The North Atlantic Coast Cooperative Ecosystem Studies Unit (NAC-CESU) was established by cooperative agreement in June 1999, with University of Rhode Island (URI) as the host university, University of Maryland Eastern Shore as a partner university, and two participating federal agencies: National Park Service (NPS) and U.S. Geological Survey (USGS). The NAC-CESU cooperative agreement was renewed in June 2004 and again in June 2009 following the successful review of self-assessment documents submitted by the host university and non-federal academic partners. Over the past fifteen years this program has grown substantially, and now consists of twenty-three academic institutions and non-profit organizations, and eight federal agencies. More than half of the non-federal partners (13 partners) have joined during the 2009-2013 assessment period and the federal partnerships have doubled during this same period (Table 1).

Now in early 2014, the NAC-CESU has prepared another 5-year self-assessment document for the period of 2009 to 2013. According to guidance provided by the CESU National Network office, this self-assessment is intended to be brief. Readers of this self-assessment are encouraged to visit the NAC-CESU website (<http://www.ci.uri.edu/naccesu/>) for more detailed information on the CESU program. Background documents referenced in this self-assessment are included on the website along with information on the NAC-CESU university partners and agencies.

Table 1. NAC-CESU partners. Bold type indicates partners that have joined during the 2009-2013 assessment period.

CESU Partner	Year joined
Non-federal partners	
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	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
Narragansett Indian Tribal Historic Preservation Office	2013
Schoodic Education and Research Center	2013
University of New England	2013
Federal partners	
National Park Service	1999
U.S. Geological Survey	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

Criterion 1: Were the formal commitments identified in the CESU agreement (and amendments) fulfilled?

1) Did the host university and partner institutions conduct with participating federal agencies a program of research, technical assistance and education related to the CESU objectives?

From 2009 to 2013 the NAC-CESU has worked with 58 principal investigators of the partner and federal agencies on 99 different natural and cultural research, technical assistance, and education projects representing over \$9 million of National Park Service funding and over \$200,000 of Natural Resources Conservation Service funding. Appendix 1 provides details on all projects that were funded during the 5-year assessment period, including identification of the funding agency and individual project funding amount.

2) Explain how the host university and partner institutions fulfilled their CESU role and mission statement.

The Role and Mission statement for the NAC-CESU was prepared in 1999 by the founding university institutions (URI and University of Maryland Eastern Shore) and federal agencies (NPS and USGS). It was revised in 2003 to include sections on the emerging role of the NAC-CESU in cultural resource disciplines. The Role and Mission statement as revised in 2003 is posted on the NAC-CESU website (<http://www.naccesu.org/?q=node/8>). We considered a formal review and revision of the Role and Mission statement prior to submission of this self-assessment; however, given that seven new partners joined our CESU in 2013, it seemed more appropriate to initiate this review in 2014 allowing the new partners time to become familiar with the CESU concept, thereby providing for more informed input.

The Role and Mission Statement describes the purpose of the CESU, identifies the biogeographic scope of the NAC-CESU (i.e., coastal habitats and watersheds from Maine to Virginia), lists the coastal issue-oriented focus of the CESU, summarizes the research, technical assistance and cooperative education mission, and presents fundamental administrative procedures and roles of the host and partner institutions, Managers Committee, and federal agencies.

3) 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?

In January 2000 the NAC-CESU convened a 1-day meeting with more than 25 representatives from partner academic institutions, federal agencies, and potential federal agency partners to develop a Strategic Vision for the CESU. This strategic planning document identifies the priority research themes of the NAC-CESU (nutrient enrichment and contaminants, landscape ecology and maintenance of habitat diversity, restoration ecology, coastal geomorphic processes, monitoring and modeling long-term change, natural and cultural resources and heritage). Outreach themes identified in the strategic plan include data and information exchange and education programs. This planning document has guided the definition of research, technical assistance, and education topics supported by NAC-CESU funding. As with the Mission

Statement, the Strategic Vision Statement was revised in 2003 to reflect the cultural resource components of the CESU and addition of new university partners and will be reviewed and revised, if appropriate, to reflect the addition of new federal and non-federal partners.

4) Did the participating federal agencies, host university, and partner institutions develop and follow annual work plans to guide the activities of the CESU?

The NAC-CESU does not have a formal “annual work plan” planning process among the partners of the NAC-CESU. However, at our annual NAC-CESU meetings new federal agency initiatives or themes for the coming year are identified and pursued. For example, at the June 2013 NAC-CESU annual meeting, the Hurricane Sandy natural resource response effort was identified as a major research and monitoring initiative; climate change, ocean stewardship, development of natural resource condition metrics, and student internships were identified as priority focus areas for federal agencies at the July 2011 and June 2009 meetings. All of these themes proved to be important funding categories for the NAC-CESU, serving to guide our program activities during the assessment period.

The NPS, one of the federal agency partners within the NAC-CESU, produces an annual summary of NPS-related CESU activities (i.e., annual Report to Congress).

5) When were periodic meetings (i.e., at least annually) of the CESU convened for the purpose of collaboration and coordination of CESU activities? Describe level(s) of partner participation in meetings (include agendas or other materials, as appropriate).

University of Rhode Island, as the host, plans and coordinates the NAC-CESU annual meetings, with attendees including representatives from the participating non-federal partners, federal agencies, and invited guests (e.g., institutions considering joining). The NAC-CESU is also an active participant in the biennial CESU National Network meetings in Washington, DC. Minutes, agendas, and participants for the NAC-CESU annual meetings are posted on the CESU website (<http://www.naccesu.org/?q=node/8>).

- June 30 – July 1, 2009; NAC-CESU annual meeting hosted by College of the Atlantic, Bar Harbor, ME. (10 non-federal partners represented; 2 federal agencies; CESU National Office; total individuals participating = 21)
- July 12, 2011; NAC-CESU annual meeting convened by WebEx (8 non-federal partners; 5 federal agencies; CESU National Office; total individuals participating = 21)
- July 12-13, 2013; NAC-CESU annual meeting co-hosted by URI and USFWS, Narragansett, RI. (8 non-federal partners represented; 6 federal agencies; total individuals participating = 22)

During the Biennial CESU National Network meeting the NAC-CESU convenes its annual meeting. Participation is somewhat limited due to travel constraints; however, useful business is addressed.

- June 22, 2010; Dinner meeting of the NAC-CESU with participants from 2 non-federal partners and 2 federal partners.
- June 12, 2012; Afternoon meeting of NAC-CESU with participants from 4 non-federal partners and 2 federal agencies.

6) Did the unit convene annual CESU Federal Managers Committee meetings? Did the federal technical representatives actively participate in CESU meetings, communication, and planning?

Annually, the NAC-CESU federal managers and non-federal partners meet jointly (see above response, question #5). As noted from the posted meeting minutes (see question #5), there is consistent participation from NPS, NOAA, NRCS, USGS, US Army Corps, and most recently, USFWS and BOEM. To promote communication and information exchange with the non-federal partners, at each NAC-CESU meeting the federal agency representatives provide a presentation that highlights upcoming funding opportunities, emerging research initiatives, and any changes in CESU administrative procedures. These presentations, coupled with presentations by the non-federal partners on their research and technical assistance capabilities, stimulate productive discussion.

7) Did the host university coordinate activities, as appropriate, with the partner institutions and develop administrative policies for such coordination?

The University of Rhode Island, as host;

- plans and facilitates the NAC-CESU annual meetings,
- actively participates in the biennial CESU National Network meetings,
- provides travel stipends/honoraria for non-federal partners to attend the NAC-CESU annual meeting when they require financial assistance,
- frequent email correspondence with agency and non-federal partners regarding addition of new partners (reviewing new partner applications, obtaining required signatures),
- updates and maintains a database of NAC-CESU funded projects,
- updates and maintains the NAC-CESU website,
- written procedures for accepting new members were prepared; however, these procedures were superseded in 2012 when the National CESU Office issued standard procedures for all of the individual CESU programs to adopt,
- produced, tested, and implemented an on-line NAC-CESU project database. It is expected that this on-line process can be adopted by other CESU programs.

During the assessment period, the URI NAC-CESU Director was fully engaged in CESU National activities;

- served on the committee to establish a new CESU national logo (2010),
- co-chaired CESU Host University Directors Meeting (June 22, 2010; June 12, 2012),
- participated in numerous post-biennial meeting conference calls with CESU Host University Directors to discuss indirect cost rates, procedures for new members, and other topics.

Related to the role of the host university in the CESU National program, in June 2010 the NAC-CESU received the distinguished CESU Network National Award in recognition of being one of the four founding CESU host universities. The founding universities were acknowledged (at the National CESU meeting) for facilitating and fostering advancement of the CESU partnership from a modest collaboration to a vibrant program of multiple federal and non-federal partners.

8) *How did students participate in the activities of the CESU? What efforts were made to engage students in CESU activities? If possible, provide statistics for graduate and undergraduate students supported through CESU projects and activities.*

In fall 2013 all North Atlantic Coast CESU project investigators were sent a brief online questionnaire requesting information on products derived from CESU supported projects including student involvement, theses/dissertations, professional journal publications, technical reports, and professional presentations/posters. Involvement of students, both graduate and undergraduate, was substantial. Below are some highlights of student involvement in NAC-CESU related research from 2009 to 2013 (a full list of theses/dissertations, publications, and presentations are given in Appendix 2):

- Six graduate students have earned or are working toward a Ph.D. degree, to result in a dissertation supported by a NAC-CESU project.
- Eleven graduate students have earned or are working toward a M.S. degree, to result in a thesis supported by a NAC-CESU project.
- One post-doctoral candidate was supported by a NAC-CESU project.
- Two undergraduate students have completed or are working on an undergraduate thesis project supported by a NAC-CESU project.
- 53 graduate students were supported on NAC-CESU funded projects.
- 99 undergraduate students were supported on NAC-CESU funded projects and an additional 33 undergraduates worked in conjunction with, but were not directly supported, on NAC-CESU projects.
- Students were the senior authors for seven manuscripts and were co-authors on five additional manuscripts published in peer-reviewed journals.
- Graduate students were the primary authors on 22 presentations given at scientific conferences, and were co-authors on an additional 19 presentations.

Regarding student involvement it must also be mentioned that during the 5-yr assessment period the NAC-CESU has actively supported student internships, where the student is financially supported and is engaged in a natural resource stewardship project at a park unit, with guidance from a faculty and National Park Service mentor.

- 2009-2013 the CESU supported 6 undergraduate students at College of the Atlantic, working in partnership with Acadia National Park. This internship program is expected to continue with University of Maryland Eastern Shore in 2014.
- A program through the NAC-CESU has been established with UMass-Boston to support minority studies to engage with faculty and scientists at Boston Harbor Islands National Park Area.
- In 2010 the NAC-CESU launched a pilot internship program, supporting a URI graduate student to spend a semester in Washington under the mentorship of the Science Advisor to the NPS Director. This program was supported by the NPS, with matching funds provided by URI, and serves as a model for other agencies and universities to adopt.
- 2011-2013, the NAC-CESU supported with NPS funds, a graduate student under a program called *PATHWAYS for Students and Recent Graduates to Federal Careers*. The student completed her Master's degree in 2013 and as a federal employee under *PATHWAYS* the student has opportunities to obtain a permanent federal position.

9) *Did the host university and/or partner institutions offer educational and training opportunities to participating federal agencies' employees?*

During the 2009-2013 assessment period the NAC-CESU supported several educational and training opportunities for federal employees, students, and others; examples include:

- Survey methods for shallow water habitat mapping in Northeast National Parks, Wildlife Refuges, and Estuarine Research Reserves; A Workshop hosted and supported by the NAC-CESU (September 2009)
 - Participants from NPS, USFWS, NOAA, USGS, URI, University of New Hampshire, Rutgers University, Coastal Carolina University.
 - Hart, T., C. Roman, and M. Tyrrell. 2010. Survey methods for shallow water habitat mapping in Northeast National Parks, Wildlife Refuges, and Estuarine Research Reserves: Workshop proceedings. Natural Resources Technical Report NPS/NER/NRTR-2010/145. National Park Service, Philadelphia, PA.
- Climate change in Northeast Region coastal parks; A Workshop hosted by URI and the NAC-CESU (December 2009)
 - Participants from NPS, USFWS, USGS, URI, Rutgers University, Stony Brook University, University of Massachusetts, College of the Atlantic
 - Roman, C.T., and A.L. Babson. 2013. Climate change in Northeast Region coastal parks: Synthesis of a workshop on research and monitoring needs. Natural Resource Report NPS/NER/NRR—2013/697. National Park Service, Fort Collins, CO.
- National Park Service Science Dialog; a meeting with the *NPS Science Advisor to the Director* offering ideas to advance science within the NPS. Hosted and sponsored by the URI-Coastal Institute (February 2010)
 - Participants from the following NAC-CESU non-federal partners; College of the Atlantic, CUNY-Barnard College, Rutgers University, Stony Brook University, SUNY-ESF, University of Maine, University of Rhode Island
- GIS metadata training by the Environmental Data Center at the University of Rhode Island, with federal agency participation included:
 - June 2009: Coastal Inundation Mapping Course – participants from URI Geospatial Extension Program and trainers from the NOAA Coastal Services Center
 - March 2011: Training for USFWS and NPS personnel for GPS shoreline change monitoring – participants from NPS, URI, Rutgers University, USFWS (20+ participants)

10) *Did the host university provide basic administrative and clerical support, access to campus facilities, suitable office space and basic services for participating CESU federal agency technical representatives/personnel to be located at the host university?*

Under the umbrella of the NAC-CESU cooperative agreement, the University of Rhode Island (URI) serves as home base for several National Park Service programs, including the NAC-CESU Research Coordinator, Northeast Region Coastal and Barrier Monitoring Network, Northeast Region Climate Adaptation Coordinator, and Northeast Region GIS Field Technical

Support Center. The USGS has also duty-stationed a research scientist at URI. URI provides offices, administrative and clerical support, and access to university facilities (e.g., labs, libraries) for all federal personnel in residence and associated with the NAC-CESU agreement, currently including six full-time NPS resident staff, one part-time NPS staff, and one USGS resident scientist (NOTE: Four of the NPS resident staff associated with the Monitoring Network provide modest financial support for office space, all others provide no compensation to URI for space or services). All of the federal NAC-CESU associated staff are fully integrated into the academic environment of the university. The NPS-CESU Research Coordinator and the USGS scientist have “professor-in-residence” status, thereby serving as major professors for graduate students, serving on graduate student committees, and participating in all activities of their respective academic departments (i.e., Graduate School of Oceanography, Department of Plant Sciences, Department of Natural Resources Science). Their value to URI has been repeatedly noted by the upper administration.

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

Appendix 4 provides more detail by year. In-kind support for the host duties of the CESU average approximately \$42,000-\$46,000 per annum. The location of the NAC-CESU with the director of the URI Coastal Institute allows for ongoing support in a very streamlined operation. In addition, the university provides office space, facilities for meetings, workshops, conferences and symposia.

The URI Coastal Institute has also employed students to work on CESU projects ranging from administrative duties to planning and managing events. We make every effort to make their work a learning experience as well as an opportunity to engage in CESU events, meetings, workshops, etc., which affords them the opportunity to meet researchers from numerous disciplines, non-federal and federal institutions and agencies.

12) What federal support has the host institution received over the last five years (both financial and in-kind) specifically to support CESU host institution operations? Provide details (e.g., support by agency, year, instrument/mechanism).

The addition of 4 new federal agencies - USFWS, NOAA, BOEM, DOD - during the 5-yr assessment period yielded fees in the amount of \$40,000.

The NPS also provides modest funds to support the NPS NAC-CESU Research Coordinator and Climate Adaptation Coordinator, including assistance with maintenance of administrative files, facilitation of NPS-sponsored events (e.g., workshops), office supplies, phone charges, and computer maintenance and troubleshooting through the university cost-center (FY2009 \$10,600, FY2011 \$9,500, FY2013 \$9,000).

The NPS supplied partial support for a pilot internship program, supporting a URI graduate student to spend a semester in Washington under the mentorship of the Science Advisor to the NPS Director (FY2010 \$5,000).

13) Where is the CESU Director's office formally stationed (distributed) within the host institution (e.g., Office of the President, School of Natural Resources and the Environment, Department of Forest Resources)?

The NAC-CESU is within the URI Coastal Institute. The Director of the Coastal Institute, and Director of the NAC-CESU, reports to the Office of the Provost and Vice President for Academic Affairs. The Coastal Institute is an 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, the College of Arts and Sciences, the College of Engineering, and the Graduate School of Oceanography.

Criterion 2:

Were the projects successfully completed, and was there effective delivery of relevant and high quality project results to managers, consistent with the mission of the CESU?

1) What percentage of projects were conducted successfully, with all project deliverables accepted by collaborating federal agency(s) providing project funds?

All completed NAC-CESU projects have been successful and their deliverables have been accepted by collaborating Federal partners. Many NAC-CESU research projects are in progress, with no reports of problems. A comprehensive list of NAC-CESU projects (completed and ongoing) is presented in Appendix 1. Additionally the success of NAC-CESU supported projects is represented by the substantial number of publications in peer-reviewed scientific journals, technical reports, and presentations at scientific meetings. A list of these products is presented in Appendix 2.

2) What percentage of projects were unsuccessful, with project deliverables rejected by collaborating federal agency(s) providing project funds? If projects were unsuccessful or difficult, why?

There are no reports of any project deliverables being rejected by the federal agencies.

3) How did the host university and partner institutions provide effective delivery of relevant and high quality project results to managers, consistent with the mission of the CESU?

The NAC-CESU and cooperating federal agencies have used a variety of methods to convey the results of research projects to resource managers. These included publications in peer reviewed journals, technical reports, presentations to resource managers at their field locations, presentations at national/international conferences, workshops, and development of a comprehensive and informative NAC-CESU website (www.ci.uri.edu/nacesu/). A list of these products is presented in Appendix 2. As an example of NAC-CESU supported researchers interacting with managers, Fire Island National Seashore and Acadia National Park each convene biennial (sometimes annual) science conferences with participation from CESU project investigators dominating the agendas. It is also noted that the NAC-CESU sponsored a climate change workshop (Dec 2009) for park managers, with invited speakers and participants from URI, Rutgers University, Stony Brook University, University of Massachusetts, and College of the Atlantic. Our NAC-CESU non-federal partner scientists have also served important roles providing technical advice to park managers on topics related to, among others, shoreline change (e.g., Rutgers University, Provincetown Center for Coastal Studies), horseshoe crabs and other species of concern (e.g., URI, Harvard University), climate and sea-level modeling (e.g., Columbia University, URI), data analyses for Jamaica Bay salt marsh restoration (Stony Brook University, URI), and responses to Hurricane Sandy (e.g., Rutgers University, Stony Brook University, URI).

Criterion 3: Was there involvement of the partner institutions as appropriate in the activities and projects of the CESU?

1) Did all partner institutions participate in activities of the CESU (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).

Participation in NAC-CESU administrative activities has generally been good. For example, participation at our annual meetings was as follows;

- June 2009; 12 partners attended (non-federal and federal) = 75% of the total # of partners (16)
- July 2011; 13 partners attended = 59% of the total # of partners (22)
- July 2013; 13 partners attended = 71% of the total # of partners (24)

Our most successful meetings with regard to attendance were June 2009 and July 2013, meetings that were co-hosted by College of the Atlantic/Acadia NP and URI/USFWS, with field trips and group dinners. The ability for CESU partners to interact in an informal setting, learn and exchange ideas (i.e., field trips, group dinners) was very positive. The July 2011 annual meeting was a WebEx format and not supported by members as a good approach for future meetings.

Partners are very good about responding to individual emails and group emails. Phone calls are promptly returned. Any call for advice is generally greeted with a substantive response of ~70-80% of partners. The one sticking point is the signing of amendments. I am persuaded that this is because a given institution may not allow the CESU Technical Representative or Administrative Contact to sign official documents; consequently, the vast majority of the partners may have approved a new partner but fails to sign the amendment knowing the absence of a signature past 45 days signals assent.

2) Did all partner institutions participate in projects of the CESU? What percent of partners received funding through the CESU Network? Did partner institutions participate in projects of the CESU?

During the 2009 to 2013 assessment period, 99 projects have been supported with funding from the National Park Service and USDA Natural Resources Conservation Service (Table 2). Sixty percent (14 of 23) of NAC-CESU partners received support during the assessment period. The six new partners that joined in 2013 did not really have ample opportunity to compete for funding. Number of projects and total funding support obligated to each partner institution are provided below (Table 2).

Table 2. Number of projects supported during the 2009-2013 assessment period.

Partner University	Number of projects supported	Total funds allocated
National Park Service support		
Bates College	1	\$100,000
Biodiversity Research Institute	2	\$90,016
City University of New York	5	\$262,428
College of the Atlantic	2	\$127,774
Columbia University	2	\$63,492
Provincetown Center for Coastal Studies	4	\$300,814
Rutgers University	13	\$1,370,949
State University of New York-College of Environmental Science and Forestry	14	\$631,763
Stony Brook University	10	\$1,176,792
University of Maine	6	\$294,127
University of Massachusetts - Amherst	4	\$312,905
University of Massachusetts - Boston	1	\$100,000
University of Rhode Island	29	\$4,179,215
NPS Total	93	\$9,010,275
Natural Resources Conservation Service support		
City University of New York	1	\$114,928
Cornell University	1	\$36,500
University of Massachusetts - Amherst	1	\$71,090
University of Rhode Island	3	\$110,839
NRCS Total	6	\$222,518

3) *What efforts were made to encourage and broaden participation in the CESU by all partners? Provide details (e.g., challenges to participation, successful approaches).*

To enhance participation by some of the less active non-federal partners, the NPS initiated student internship programs, matching students and their college mentors with nearby park units and NPS mentors; see response to Criterion 1, question 8 (e.g., College of the Atlantic and Acadia NP; UMass-Boston and Boston Harbor Islands National Park Area). This approach enables university faculty/mentors to become familiar with park research needs, provides students with resource stewardship experience, and provides parks with needed technical assistance. The NPS plans to initiate this student internship program in FY2014 with University of Maryland Eastern Shore and Assateague Island National Seashore.

Other successful approaches to reach out to CESU partners, especially new partners include;

- seek new partners to host the annual NAC-CESU meeting (e.g., College of the Atlantic, June 2009)
- NAC-CESU representatives travel to non-federal institutions, providing an overview of the CESU program and discuss research opportunities
 - January 2010, University of Maine
 - January 2010, University Massachusetts-Boston
 - January 2012, Provincetown Center for Coastal Studies

Criterion 4: How did the CESU facilitate collaboration and substantial involvement among its participants?

1) What efforts were made to communicate each partner institution's strengths and expertise to the federal partners (e.g., listing investigators on the CESU website, expertise database, networking at meetings)?

During the early years of the NAC-CESU, URI developed an experts database with links to non-federal partner websites; however, it quickly become apparent that with frequent changes in university-nonfederal partner personnel, departmental website changes, and the addition of new partners the database become quickly outdated and difficult to maintain.

Now, at each of our annual meetings, a significant part of the agenda is dedicated to presentations by new members highlighting the technical strengths and expertise of their respective institutions. Long-time members also highlight some of their most interesting NAC-CESU supported projects. These presentations and discussions that follow among the researchers and agencies proves to be the initiation of productive communication and networking.

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

The federal agencies associated with the NAC-CESU, as well as those affiliated with the other CESUs nationwide, issues calls for “Statements of Interest and Qualifications” or something similar. These are posted on the NAC-CESU website, as well as sent via email to the technical and administrative contacts for each of the non-federal partners of the NAC-CESU. Some “Statements of Interest and Qualifications” are open to only the NAC-CESU non-federal partners, some are open to a select few CESU programs, while others are open to all partners affiliated with the CESU Network nationwide. For example, the NAC-CESU and the Chesapeake Watershed CESU have an overlapping boundary and both have non-federal partners with a strong expertise in coastal issues, thus many of the Statements of Interest and Qualifications” are open to these two CESU partners.

It is the role of the non-federal partner contacts to distribute the call for Statements to interested personnel from throughout their institution. This important role is emphasized at the annual meetings and in other communications with partners.

This approach seems to be successful. For example, in FY2013 the NPS issued a call for Statements of Interest and Qualifications, open to the NAC-CESU and Chesapeake Watershed CESU, for submerged marine habitat mapping. Nine (9) institutions responded (7 from NAC-CESU; 2 from Chesapeake Watershed).

Appendix 1: NAC-CESU Active Projects, 2009 to 2013

Active projects (defined as completed or ongoing during the 2009-2013 assessment period) supported by the NAC-CESU are listed by funding agency (NPS and NRCS) and non-federal partner. The number in front of each project corresponds to the project number referenced in parentheses in the publications, reports, and presentations listed in Appendix 2. The project title, principal investigator, affiliation, and amount of obligated funds for the 2009 to 2013 self-assessment period is provided. Publications, presentations, and reports without numbers were a result of projects funded prior to this assessment period (prior to 2009).

National Park Service Supported Projects***Bates College***

1. Ewing, H. Appalachian Trail Atmospheric Deposition Effects Study. FY10 \$47,205, FY11 \$35,532, FY12 \$17,263, Total \$100,000

Biodiversity Research Institute

2. Evers, D. Developing a management plan for breeding Common Loons: Understanding reasons for the current decline. FY12 \$20,000; FY13 \$15,000; Total \$35,000.
3. Evers, D. Indicators of mercury in national park ecosystems. FY12 \$55,016.

College of the Atlantic

4. Anderson, J. Impact of sea-level rise on nesting seabirds within the Acadia Archipelago. FY10 \$99,874.
5. Anderson, J. North Atlantic Coast CESU Student Internship at Acadia National Park. FY09 \$27,900.

Columbia University

6. Dolkart, A. Conduct Historical Research for Governors Island National Monument. FY12 \$26,700; FY13 15,000; Total \$41,700
7. Horton, R. Climate Science Synthesis and Analysis to Support National Park Service Scenario Workshop. FY12 \$21,791.

City University of New York

8. Ethnographic Overview and Assessment of the Staten Island Unit, Gateway National Recreation Area. FY11 \$90,000.
9. Torres, A. Ethnographic Overview and Assessment, Paterson Great Falls National Park System. FY13 \$100,000.
10. Branco, B. Response of Benthic Infauna to Marsh Restoration in Jamaica Bay. FY13 \$32,428.
11. Rothbard, R. Cooperative development of educational programs with CUNY, addressing environmental issues and developing pilot internship program. FY10 \$20,000.
12. Rothbard, R. Develop a Research-based Education and Teacher Professional Development Program. FY11 \$20,000.

Provincetown Center for Coastal Studies

13. Borrelli, M. Development of an ecosystem conceptual model and modeling approach for the Herring River restoration project. FY12 \$29,000.

14. Costa, A. Nutrient analysis of estuarine and freshwater water samples. FY13 \$6,000.
15. Giese, G. Coastal instability and cross-shore sediment movement: Management in the face of sea level rise. FY12 \$165,840; FY13 \$80,000; Total \$245,840
16. Giese, G. Herring Cove beach (Cape Cod National Seashore): Technical assistance on coastal processes. FY12 \$19,974.

Rutgers University

17. DeLuca, S. Future of the Hudson/Raritan Estuary. FY10 \$8,930.
18. DeLuca, M. Impacts of Superstorm Sandy: Coastal adaptation for affected parks and revegetation Staten Island Unit, Gateway National Recreation Area NY & NJ. FY13 \$50,024.
19. DeLuca, M. Impacts of Superstorm Sandy: Mapping and quantification of geomorphological change GATE, FIIS, ASIS. FY13 \$253,310.
20. Harvey, A. Conference on Cultural Landscapes: Preservation Challenges in the 21st Century. FY12 \$11,750.
21. Lockwood, J. Recovering small Cape Sable Seaside Sparrow subpopulations: the breeding and dispersal of sparrows in the eastern Everglades. FY11 \$101,774.
22. McCay, B. Ethnographic overview and assessment of Sandy Hook Unit, Gateway NRA. FY10 \$89,000.
23. Nordstrom, K. Evaluating the Geomorphological and sedimentological effects of a demonstration project for restoring bayside sediment processes at Sailors Haven Marina. FY10 \$27,768; FY11 \$128,097; FY12 \$50,558; Total \$206,423.
24. Nordstrom, K. Facilitating migration of coastal landforms and habitats in response to rising sea-levels: An adaptation strategy for the Northeast Region coastal parks. FY10 \$177,965.
25. Psuty, N. Development of a coastal geomorphic monitoring protocol. Northeast Coastal and Barrier Network. FY09 \$50,607 (this is year 5 support for a project that began in FY04, total support \$362,398).
26. Psuty, N. Development of a Coastal Geomorphological Monitoring Protocol: Gateway Monitoring and Production of Annual and Trend Reports. FY11 \$59,849; FY13 \$40,059; Total \$99,908.
27. Psuty, N. Geomorphological maps of National Park Service coastal parks in New York and New Jersey. FY11 \$173,324.
28. Psuty, N. Impacts of shoreline change: survey of Plumb Beach and Great Kills. FY10 \$3,000.
29. Psuty, N. Sediment budget surveys and macrofaunal monitoring: Slurry pipeline effects at Gunnison Beach and the Critical Zone, Sandy Hook Unit, Gateway National Recreation Area. FY09 \$44,996; FY10 \$49,989; FY11 49,949; Total \$144,934

SUNY – College of Environmental Science and Forestry

30. Cohen, J. Wildlife Road Mortality Estimation and Training Programs - Resources of the National Park System (CESU). FY13 \$30,000.
31. Endreny, T. DEWA Hydrologic Flows. FY13 \$48,760.
32. Gordon, J. Complete Research, Inventory, and Evaluation of the Springwood Cultural Landscape, Home of Franklin D. Roosevelt National Historic Site. FY11 \$45,000
33. Gordon, J. Conduct Cultural Landscape Preservation Field School at Acadia National Park. FY12 \$45,262.

34. Gordon, J. Develop treatment recommendations for cultural landscape of Chancellorsville Battlefield, Fredericksburg and Spotsylvania County Battlefields National Military Park. FY13 \$43,000.
35. Gordon, J. Document and evaluate cultural landscape of Chancellorsville Battlefield, Fredericksburg and Spotsylvania County Battlefields National Military Park. FY12 \$59,000.
36. Gordon, J. Document and Evaluate Cultural Landscape of Gettysburg National Cemetery, Gettysburg National Military Park. FY12 \$45,000.
37. Gordon, J. Document Carriage Road System for NPS cultural landscapes inventory, Acadia National Park. FY12 \$26,500.
38. Gordon, J. Provide technical assistance to cultural landscapes in national parks, phase III. FY10 \$47,900.
39. Gordon, J. Provide cultural landscape preservation assistance to National Parks in the Northeast Region. FY13 \$30,000.
40. Gordon, J. Research and evaluate cultural landscape of the Marin Headlands, Golden Gate National Recreation Area, Phase III: District-wide existing conditions, analysis & evaluation, and treatment. FY11 \$80,600.
41. Gordon, J. Research, Evaluate, and Prescribe Treatment for the Cultural Landscape of Muir Woods National Monument. FY13 \$79,591.
42. Nowak, C. Develop a forest stewardship plan for Roosevelt-Vanderbilt National Historic Sites. FY10 \$11,150.
43. Tierney, G. Assessment of Natural Resource Condition for Marsh-Billings-Rockefeller National Historical Park. FY12 \$40,000.

Stony Brook University

44. Bokuniewicz, H. Long Island sediment management. FY10 \$40,150.
45. Cochran, K. Nitrogen a cause of marsh loss in Jamaica Bay? FY10 \$78,899.
46. Cochran, K. Using Naturally Occurring Radium (Ra) Isotopes to Evaluate Drainage in Jamaica Bay Marshes. FY11 \$10,000.
47. Flag, C. Continuation of physical monitoring of the Old Inlet breach, Fire Island National Seashore. FY13 \$80,210.
48. Flood, R. High-resolution bathymetric and backscatter mapping in Gateway National Recreational Area. FY09 \$20,000 (total project funding with FY08 support = \$132,000)
49. Gobler, C. Assessing the response of the Great South Bay plankton community to Hurricane Sandy. FY13 \$395,000.
50. Levinton, J. Transplant study of oysters and scallop performance in Jamaica Bay. FY10 \$80,463.
51. Peterson, B. Assessing the response of the Great South Bay estuarine fauna to Hurricane Sandy: Focus on nekton utilization of seagrass habitats. FY13 \$197,780.
52. Peterson, B. Monitoring estuarine condition at Fire Island National Seashore. FY09 \$31,747; FY10 \$35,984 (total project support with FY07 and FY08 support = \$134,424).
53. Peterson, B. Monitoring estuarine condition at Fire Island National Seashore, Sagamore National Historic Site and Gateway National Recreation Area. FY11 \$34,571; FY13 \$171,988; Total \$206,559.

University of Maine

54. Groden, E. Develop and test an Integrated Pest Management Plan for the invasive

- European fire ant in Acadia National Park. FY11 \$67,847.
55. Nelson, S. Hg and dragonflies. FY13 \$72,000.
56. Olsen, B. Predicting the effects of climate change on migratory birds and bats: Quantifying the Maine Gulf flyways. FY10 \$63,007; FY11 \$29,998; Total \$93,005.
57. Olsen, B. Testing for population change in the climate-sensitive breeding birds of Acadia National Park. FY11 \$2,940.
58. Russel, A. Scope of Work for the review and reporting of the key policies in each of the 5 New England States and high visibility demonstration projects related to one of the NEGC/CLC's strategic initiatives, Connect People to the Outdoors. FY11 \$10,986.
59. Saros, J. Determine critical nitrogen loads to boreal lake ecosystems using the response of phytoplankton. FY09 \$47,349.

University of Massachusetts-Amherst

60. Griffin, C. Forecasting songbird vulnerabilities to climate change and interactions with wind energy development in the Gulf of Maine. FY12 \$135,000.
61. Loomis, D. Coastal marine recreation at Biscayne and Dry Tortugas National Parks- Understanding the ecological attitudes, behavior, and knowledge of park visitors. FY09 \$30,000 (total project funding with FY08 support = \$130,000)
62. Mabee, S. Bedrock geologic mapping of the Boston Harbor Islands National Park Area and Saugus Iron Works National Historic Site. FY09 \$120,000.
63. McGarigal, K. Development of remotely-sensed landcover map of the Province Lands Dunes and Hatches Harbor salt marsh, including an assessment of application to long-term landcover mapping/monitoring at Cape Cod National Seashore. FY09 \$20,306; FY10 \$7,599; Total \$27,905.

University of Massachusetts-Boston

64. Student internships for natural resources at Boston Harbor Islands. FY12 \$100,000.

University of Rhode Island

65. August, P. Assessing inundation risk from sea level rise and storm surge in coastal National Parks using high accuracy geodetic control. FY09 \$590,000.
66. August, P. Acquisition coordination, compilation, data management and change analysis of LiDAR and other geospatial data collected pre- and post- Hurricane Sandy. FY13 \$775,500.
67. August, P. Data Management and program support for the Northeast and Coastal Barrier Network Inventory and Monitoring Program. FY10 \$168,000; FY11 \$70,932; Total \$238,932.
68. August, P. Evaluation Mapping of Critical Park Areas for Planning and Post- and Future Storm Evaluation and Modeling. FY13 \$820,000.
69. August, P. Identification and evaluation of potential National Natural Landmarks. FY10 \$30,000.
70. August, P. Impacts of beach scraping and artificial dune creation on the natural resources of Fire Island National Seashore-Phase I: seasonal mapping of the subaerial beach and foreshore. FY09 \$8,111 (total project support with FY06 support = \$39,212).
71. August, P. Resource based geospatial data collection, analysis and delivery in support of enterprise-based geographic information systems for the Northeast Region of the national Park Service. FY09 \$119,000; FY10 \$98,080; FY11 \$92,070; FY12 \$97,770; FY13

- \$112,070; Total \$518,990.
72. Boothroyd, J. Development of historical topographical modeling of the beach/dune system in Northeast Coastal and Barrier Network Parks: ASIS, CACO, FIIS, and GATE. FY09 \$59,279.
 73. James-Pirri, M.J. Annual support services for National Park Service, North Atlantic Coast Cooperative Ecosystem Studies Unit at the University of Rhode Island. FY09 \$10,600.
 74. James-Pirri, M.J. Assessment of natural resource conditions at Hopewell Furnace NHS, Gettysburg NMP, and Eisenhower NHS. FY13 \$86,954.
 75. James-Pirri, M.J. Assessment of Natural Resource Conditions for Sagamore Hill National Historic Site (NY). FY09 \$26,800.
 76. James-Pirri, M.J. Assessment of spawning horseshoe crabs within Mid-Atlantic Coastal NPS Units. FY11 \$49,721; FY12 \$42,621; FY13 \$34,132; Total \$126,474
 77. James-Pirri, M.J. Coastal park data collection and analysis: Marsh elevation, biotic sampling, and literature synthesis on selected current issues. FY10 \$28,200.
 78. James-Pirri, M.J. Field sampling and data analysis for coastal National Park units. FY12 \$58,890.
 79. James-Pirri, M.J. Monitoring spawning horseshoe crabs, *Limulus polyphemus*, within Cape Cod National Seashore. FY09 \$29,667.
 80. James-Pirri, M.J. Providing a scientific foundation for addressing natural resource management issues at coastal National Parks of the Northeast: Boston Harbor Islands intertidal habitat study. FY11 \$45,000.
 81. James-Pirri, M.J. Salt marsh ecological data analyses and assessment of ocean stewardship technical capacity for Northeast region coastal parks. FY09 \$51,900.
 82. James-Pirri, M.J. Support Services for National Park Service, North Atlantic Coast Cooperative Ecosystem Studies Unit at the University of Rhode Island. FY11 \$9,500; FY13 \$9,000; Total \$18,500.
 83. 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. FY13 \$130,760.
 84. Karraker, N. Northeast Coastal and Barrier Network Ecological Inventory and Monitoring Program Assistance. FY12 \$47,566.
 85. LaBash, C. Database development and program support for the Northeast Coastal Barrier Network and the National Capitol Region Network. FY09 \$26,829.
 86. Mather, R. Archeological Overview and Assessment of Submerged, Intertidal, and Shipwreck Archeological sites in the National Park Service Northeast Region Parks: Component A. FY13 \$110,000.
 87. Mather, R. Complete plan for overview and assessment, NER Submerged Archeological Resources. FY09 \$39,000; FY10 \$37,170; Total \$76,170.
 88. Mather, R. Study Maritime Heritage Resources at Saint Croix Island International Historic Site. FY10 \$8,813.
 89. Paton, P. Development and synthesis of marine and terrestrial natural resource inventory and monitoring projects for the National Park Service, Northeast Coastal and Barrier Network. FY09 \$35,346.
 90. Paton, P. Northeast Coastal and Barrier Network ecological inventory and monitoring program assistance. FY09 \$42,508. FY11 \$111,956; Total \$154,464.

91. Swift, J. Climate change in Northeast Regional coastal parks: a CESU workshop to identify research and monitoring needs. FY10 \$24,970.
92. Swift, J. Pilot project internship to promote career development through the CESU: A doctoral student assigned to the NPS Science Advisor. FY10 \$5,000.
93. Ullman, D. Evaluation of the adequacy of tidal datum information within Northeast Region coastal parks. FY13 \$35,500.

Natural Resources Conservation Service Supported Projects

City University of New York

94. Cheng, Z. Soil Microbial Diversity in Urban Environments. FY13 \$114,928.

Cornell University

95. DeGaetano, A. Climate Data Interpretation and Access Update for FOTG. FY13 \$36,500.

University of Massachusetts- Amherst

96. King, D. Developing guidelines for promoting pollinator services and shrubland birds in the Northeast. FY11 \$71,090.

University of Rhode Island- Amherst

97. Stolt, M. Soil Formation/landscape. FY09 \$39,975.
98. Stolt, M. Rapid Assessment of Soil Carbon Assistance for MO-12. FY11 \$24,880.
99. Stolt, M. Assessing DSP within Ecological Site Framework. FY11 \$45,984

Appendix 2: Publications, Presentations, and Workshops

In Fall 2013 North Atlantic Coast CESU project investigators were sent a brief questionnaire (Appendix 3) requesting information on products derived from CESU supported projects including theses/dissertations, professional journal publications, technical reports, and professional presentations/posters. Despite less than 100% response from investigators, the following list of products is impressive and demonstrates the scientific productivity of the NAC-CESU.

- Theses/Dissertations
- Publications (journals, books, or peer-reviewed agency report series)
- Technical Reports (reports submitted to the funding agency, but not included in an agency report series)
- Presentations (professional society meetings, conferences, symposia)
- Workshops sponsored by the North Atlantic Coast CESU

Number in parentheses (xx) following each citation corresponds to the project number found in Appendix 1. Some citations are related to projects that received support prior to the assessment period (2009-2013), thus are not linked to a project number from Appendix 1.

Theses/Dissertations

- Bakken, J. 2012. Soil survey investigations of freshwater subaqueous soils. M.S. Thesis, Department of Natural Resources Science, University of Rhode Island, Kingston, RI. (97)
- Bernard, K. In Preparation. Colony movement dynamics and management by repellents of the European red ant *Myrmica rubra* (L.) (Hymenoptera: Formicidae). M.S. Thesis, University of Maine, Orono, ME. (54)
- Brisbin, S. 2010. Genetic diversity and gene flow in *Zostera marina* populations across the Long Island Sound and south shore estuaries. M.S. Thesis, Stony Brook University, Stony Brook, NY. (52, 53)
- Corman, S.S. 2009. Salt marsh mosquito ditches Fire Island, NY: sedimentation rate, nekton community, and implications for restoration. M.S. Thesis, University of Rhode Island, Narragansett, RI.
- Daggett, C. 2011. Effects of increasing atmospheric nitrogen deposition and dissolved organic matter on phytoplankton in boreal lakes with differing nutrient limitation patterns. M.S. thesis, University of Maine, Orono, ME. (59)
- Eddy, E.N. 2013. Characterizing the benthic invertebrate communities of the mixed-coarse intertidal habitat in Boston Harbor. M.S. Thesis, University of Rhode Island. (80)
- Estey, E.D. 2013. Distribution characteristics and ecology of the near shore marine finfish assemblage inhabiting Massachusetts waters. Ph.D. dissertation. University of Rhode Island, Department of Fisheries, Animal and Veterinary Science, Kingston, RI.
- Furman, B. In Preparation. Space acquisition strategies of *Zostera marina*. Ph.D. dissertation, Stony Brook University, Stony Brook, NY. (52, 53)
- Grunzel, D. P. In Preparation. The role of predation risk on behavior in Passerines during migratory stopover. M.S. Thesis, University of Maine, Orono. (56)

- Jackson, L. In Preparation. *Zostera marina* seed production and predation in patches of varying size and location in Long Island South Shore Estuaries. M.S. Thesis, Stony Brook University, Stony Brook, NY. (52, 53)
- McCabe, J. D. In Preparation. Scalar processes of landbird migration in the Gulf of Maine. Ph.D. dissertation, University of Maine, Orono. (56)
- Murdukhayeva, A. 2012. Assessment of inundation risk from sea level rise and storm surge in coastal national parks. M.S. Thesis, University of Rhode Island, Department of Natural Resources Science, Kingston, RI. <http://digitalcommons.uri.edu/dissertations/AAI1508334> (65)
- Powell, M. 2013. Influence of anthropomorphic changes to landscapes on wetland birds on Mount Desert Island, Maine. M.S. Thesis, Antioch University, Keene, NH. (57)
- Renfro, A.A. 2010. Particle-reactive radionuclides (Th-234, Be-7 and Pb-210) as tracers of sediment dynamics in an urban coastal lagoon (Jamaica Bay, NY). Ph.D. dissertation, The Graduate School, Stony Brook University, Stony Brook, NY.
- Rodgers, B. 2010. How does groundwater impact eelgrass in Long Island? The role of nitrogen and herbicide in reducing eelgrass growth, survival and photosynthetic efficiency. M.S. Thesis, Stony Brook University, Stony Brook, NY. (52, 53)
- Rountos, K. 2008. The role of porewater sulfide toxicity among other multiple stressors in *Zostera marina* populations in Long Island South Shore Estuaries. M.S. Thesis, Stony Brook University, Stony Brook, NY. (52, 53)
- Strock, K.E.D. 2013. Deciphering climate-mediated changes in boreal lake ecosystems. University of Maine, Ph.D. dissertation, University of Maine, Orono, ME. (59)
- Timm, B.C. 2012. The ecology and conservation of the Eastern Spadefoot (*Scaphiopus holbrookii*) in the Province Lands of Cape Cod National Seashore. Ph.D. dissertation University of Massachusetts, Amherst. (63)

Undergraduate Senior Theses

- Murphy, T. 2012. The Herring River estuary: Understanding salt marsh restoration and how to predict the response of *Phragmites australis* to increased tidal flow. Senior Honors Thesis, University of Rhode Island, Kingston, RI.
- Strader, J. In Preparation. High School curriculum on impact of sea level rise on nesting seabirds. senior thesis, College of the Atlantic, Bar Harbor, ME. (4)

Publications

- Adams, E., A.K. Jackson, D.C. Evers. 2013. Songbirds: Indicators of mercury in national park ecosystems. Biodiversity Research Institute, Gorham, Maine. Science Communication Series BRI 2013-15. 4 pages. (3)
- Atkins, E.R., Y. Wang, Y. Zhou. 2010. EO-1 Advanced Land Imager data in submerged aquatic mapping. In Y. Wang (ed.). Remote Sensing of Coastal Environments. CRC Press, New York.
- Burdick, D.M., and C.T. Roman. 2012. Salt marsh responses to tidal restriction and restoration: A summary of experiences. Pages 373- 382 in Tidal Marsh Restoration: A Synthesis of Science and Management. Island Press, Washington, DC.
- Cochran, K.J., A.S. Kokler, D.J. Hirschberg, A.A. Renfro, S. Goodbred, Jr., A.J. Beck. 2013. Sulfur cycling in salt marshes of Jamaica Bay, Gateway National Recreation Area: Possible

- links to marsh loss. Natural Resources Technical Report NPS/NER/NRTR-2013/730. National Park Service, Fort Collins, CO.
- Corman, S.S., C.T. Roman. 2011. Comparison of salt march creeks and ditches as habitat for nekton. *Marine Ecology Progress Series* 434:57-66.
- Corman, S.S., C.T. Roman, J.W. King, P.G. Appleby. 2012. Salt marsh mosquito-control ditches: sedimentation, landscape change and restoration implications. *Journal of Coastal Research* 28:874-880.
- Davey, E., C. Wigand, R. Johnson, K. Sundberg, J. Morris, and C.T. Roman. 2011. Use of computed tomography imaging for quantifying coarse roots, rhizomes, peat, and particle densities in marsh soils. *Ecological Applications* 21: 2156-2171.
- DeLuca, M.P., L. Auermuller, M. Reding, S. Haag. 2009. Proceedings from New York/New Jersey Bight Oceans Initiative: A workshop to create a seamless network of protected shores. Cooperative project between the Institute of Marine and Coastal Sciences at Rutgers University, National Park Service, and NOAA.
- Evers, D.C. and K. Taylor. 2012. Status report for the common loon: Wyoming. Biodiversity Research Institute. Gorham, Maine. Science Communications Series BRI 2012-42. 8 pages.(2)
- Hart, T., C. Roman, and M. Tyrrell. 2010. Survey methods for shallow water habitat mapping in Northeast National Parks, Wildlife Refuges, and Estuarine Research Reserves: Workshop proceedings. Natural Resources Technical Report NPS/NER/NRTR-2010/145. National Park Service, Philadelphia, PA.
- James-Pirri, M.J. In Review. Restoration of the Turning Basin and tidal wetlands at Saugus Iron Works National Historic Site. Final report for 2008-2012 monitoring. Natural Resource Technical Report NPS/NCBN/NRTR—20XX/XXX. National Park Service, Fort Collins, CO.
- James-Pirri, M.J. 2013. Natural resource condition assessment for Sagamore Hill National Historic Site. National Park Service, Natural Resources Report NPS/NCBN/NRR—2013/617. National Park Service, Fort Collins, CO. (75)
- James-Pirri, M.J. 2012. Assessment of spawning horseshoe crabs (*Limulus polyphemus*) at Cape Cod National Seashore, 2008-2009. National Park Service, Natural Resource Technical Report NPS/CACO/NRTR—2012/573. National Park Service. Fort Collins, CO. (79)
- James-Pirri, M.J. 2010. Seasonal movement of the American horseshoe crab (*Limulus polyphemus*) in a semi-enclosed bay on Cape Cod, Massachusetts (USA) as determined by acoustic telemetry. *Current Zoology* 56(5):575-586. (79)
- James-Pirri, M.J. 2009. Natural resource assessment for Minute Man National Historical Park. National Park Service, Natural Resources Technical Report NPS/NER/NRTR-2009/141. Boston, MA.
- James-Pirri, M.J., S. Nelson, P. Vaux. 2011. Natural resource assessment for Saugus Iron Works National Historic Site. National Park Service, Natural Resources Report NPS/NER/NRR-2011/457. Philadelphia, PA.
- James-Pirri, M. J., C. T. Roman, E. L. Nicosia. 2012. Monitoring nekton in salt marshes: A protocol for the National Park Service’s long-term monitoring program, Northeast Coastal and Barrier Network. Natural Resource Report NPS/NCBN/NRR—2012/579. National Park Service, Fort Collins, CO. <https://irma.nps.gov/App/Reference/Profile/2189186>
- James-Pirri, M.J., C.T. Roman, J.L. Swanson. 2010. A method to quantitatively sample nekton in salt marsh ditches and small tidal creeks. *Transactions of the American Fisheries Society*

- 139: 413-419. (81)
- James-Pirri, M.J., P. Veillette, A. Leschen. 2012. Selected hemolymph constituents of captive, bled, and wild caught adult female American horseshoe crabs (*Limulus polyphemus*). *Marine and Freshwater Behaviour and Physiology*. 45(4):281-289. doi:10.1080/10236244.2012.730216. (79)
- James-Pirri, M.J., J. Burgess, C. T. Roman, M. Albert. 2010. Restoration of the Turning Basin and tidal wetlands at Saugus Iron Works National Historic Site: 2009 post-restoration monitoring data report. National Park Service, Natural Resource Data Series NPS/NER/SAIR/NRDS-2010/093. Philadelphia, PA.
- James-Pirri M.J., J. Burgess, C.T. Roman, M. Albert. 2010. Restoration of the Turning Basin and tidal wetlands at Saugus Iron Works National Historic Site: 2008 post-restoration Monitoring data report. National Park Service, Natural Resource Data Series NPS/NERO/NRDS-2010/054. Fort Collins, CO.
- James-Pirri, M.J., J.L. Swanson, C.T. Roman, H.S. Ginsberg, J.F. 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.
- James-Pirri, M.J., K. Tuxbury, S. Fish Marino, S. Koch, W. Kurz. 2009. Summary of past and future horseshoe crab research on Cape Cod, MA (USA). Pages 622-623 *In* J.T. Tanacredi, M.L. Botton, and D.R. Smith, editors. *Biology and Conservation of Horseshoe Crabs*. Springer, NY. (79)
- Lyons, P. C. Thornber, J. Portnoy, E. Gwilliam. 2009. Dynamics of macroalgal blooms along the Cape Cod National Seashore. *Northeastern Naturalist* 16: 53-66.
- McElroy, A.E., M. Benotti, G. Edinger, A. Feldman, C. O'Connell, G. Stewart, R.L. Swanson, J. Waldman, J. 2009. Assessment of natural resource conditions in and adjacent to Fire Island National Seashore. Natural Resource Report NPS/NRPC/NRR-2009/139. National Park Service, Fort Collins, CO.
- Murdukhayeva, A.; August, P., Bradley, M.; LaBash, C., and Shaw, N., 2013. Assessment of inundation risk from sea level rise and storm surge in northeastern coastal national parks. *Journal of Coastal Research*, 29(6A), 1–16. (65)
- Murdukhayeva, A., M. Bradley, N. Shaw, C. LaBash, H. Grybas, T.-L. Davis, P.V. August, T. Smith, R. Duhaime. 2012. Using high accuracy geodesy to assess risk from climate change in coastal National Parks. *In*: Weber, S., (ed.) 2012. *Rethinking Protected Areas in a Changing World: Proceedings of the 2011 George Wright Society Biennial Conference on Parks, Protected Areas, and Cultural Sites*. Hancock, MI. <http://www.georgewright.org/1144murdukhayeva.pdf> (65)
- Neckles, H.A., B.S. Kopp, B.J. Peterson, P.S. Pooler. 2012. Integrating scales of seagrass monitoring to meet conservation needs. *Estuaries and Coasts* 35:23-46. (52, 53)
- Nelson, S.J., P. Vaux, M.J. James-Pirri, and G. S. Giese. 2012. Natural resource condition assessment: Cape Cod National Seashore, Massachusetts. Natural Resource Report. NPS/NER/NRR—2012/605. National Park Service. Fort Collins, CO.
- Nordstrom, K.F., N.L. Jackson. 2013. Removing shore protection structures to facilitate migration of landforms and habitats on the bayside of a barrier spit. *Geomorphology* 199: 179-191. (24)
- Olsen, B.J., J.D. McCabe, E.M. Adams, D.P. Grunzel, A.J. Leppold. In Press. Matching ephemeral resources on autumnal stopover and the potential for mismatch. *In*: E. Wood and

- J Kellermann (eds). Phenological Synchrony of North American Bird Migration with Seasonal Resources in a Changing Climate. *Studies in Avian Biology*. (56)
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- Psuty, N.P. and T.M. Silveira, 2011. Tracking coastal geomorphological change: An application of protocols to collect geotemporal data sets at the National level in the US. *Journal of Coastal Research*, Special Issue 64, pp 1253-1257. (25)
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- Psuty N. P., T. M. Silveira, A. Love. 2010. Shoreline change along Fire Island National Seashore: annual monitoring report, 2007-2008. Natural Resource Data Series NPS/NCBN/NRDS—2010/042. National Park Service, Fort Collins, CO. (25)
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- Psuty, N.P., T.M Silveira, A. Spahn, and D. Skidds, 2012. Northeast Coastal and Barrier Network Geomorphological Monitoring Protocol: Part II – coastal topography. Natural Resource Report NPS/NCBN/NRR —2012/591. National Park Service, Fort Collins, CO. (25)
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- Psuty, N. P., M. Duffy, J. F. Pace, D. E. Skidds, and T. M. Silveira. 2010. Northeast Coastal and Barrier Network geomorphological monitoring protocol: Part I—ocean shoreline position. Natural Resource Report NPS/NCBN/NRR —2010/185. National Park Service, Fort Collins, CO. (25)
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- Roman, C.T., and D.M. Burdick, editors. 2012. *Tidal Marsh Restoration: A Synthesis of Science and Management*. Island Press, Washington, D.C. 406p.
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- Timm, B.C., S.M. Smith, S.E. Greenspan. In Press. Remotely-sensed mapping of *Ammophila* distribution and density at Cape Cod National Seashore. *Journal of Coastal Research*. (63)
- Wang, Y. Q., C. M. Traber. 2013. Remote sensing of terrestrial and submerged aquatic vegetation at Fire Island National Seashore: Long-term resource management and monitoring. Natural Resource Technical Report NPS/NCBN/NRTR—2013/742. National Park Service, Fort Collins, CO.
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Presentations (professional society meetings, conferences, symposiums)

- Adams, E.M., M.T.K. Tsui, A.K. Jackson, D.C. Evers, J.D. Blum. Determining sources of mercury exposure in terrestrial songbirds. NYSERDA-Environmental Monitoring, Evaluation and Protection in New York, November 6-7, 2013. Albany, NY. (3)
- Anderson, J. Potential impact of sea-level rise and climate change on seabird nesting colonies in Maine USA. Poster. Annual Schoodic Education and Research Center Science Biological Symposium, 2011. Winter Harbor. ME. (4)
- Anderson, J. Colony collapse in herring and great black-backed gulls: an assessment of possible causes and consequences. 5th Quadrennial North American Ornithological Conference, August 14-18, 2012. Vancouver, BC. (4)
- Anderson J. Gulls in two Worlds. Waterbirds Annual Meeting, September 24-29, 2013. Wilhelmshaven, Germany. (4)
- Auermuller, L., C. T. Roman. The CESUs role in communicating marine and coastal science. Session Organizers. CESU 2010 Biennial National Meeting, June 22-24, 2010. Washington, DC.
- Bakken, J.M., and M.H. Stolt. Soil survey investigations of freshwater subaqueous soils: Carbon accounting and invasive species. Annual Meetings of the Soil Science Society of America, October 16-19, 2011. San Antonio, TX. (97)
- Bakken, J. and M.H. Stolt 2010. Freshwater subaqueous soil survey investigations and application. Annual Meetings of the Soil Science Society of America, October 31- November 4, 2010. Long Beach, CA. (97)
- Ballman, E. and E. Groden. Impact of the invasive European fire ant, *Myrmica rubra* L. (Hymenoptera: Formicidae) and their control treatments on non-target arthropods within Acadia National Park. Acadia National Park Science Symposium, October 23, 2012. Winter Harbor, ME (54)
- Ballman, E., E. Groden, K. Bernard, J. Lund. Year two update of site-specific integrated pest management of the invasive European fire ant, *Myrmica rubra* L. (Hymenoptera: Formicidae), within Acadia National Park. Acadia National Park Science Symposium, October 23, 2012. Winter Harbor, ME. (54)
- Brisbin, S. J., B. J. Peterson. Genetic diversity and gene flow in *Zostera marina* populations in Great South Bay, New York. 39th Benthic Ecology Meetings, March 10-13, 2010. Wilmington, NC. (52, 53)
- Brunelle, M. E., B. J. Peterson, B. T. Furman. Morphological differences in deep edge seagrass in Great South Bay, New York. New York Marine Sciences Consortium meeting October 8, 2010. Oakdale, NY. (52, 53)
- Corman, S.S., C.T. Roman. The ecological role, physical impact and filling rate of salt marsh mosquito ditches under consideration for restoration. 7th Biennial Fire Island National Seashore Planning, Science and Research Conference, April 21-22, 2010. Patchogue, NY.
- Corman, S.S., C.T. Roman. The ecological role, physical impact and filling rate of salt marsh mosquito ditches under consideration for restoration. Coastal and Estuarine Research Federation 20th Biennial Conference, Nov. 2-6, 2009. Portland, OR.
- Corman, S.S., C.T. Roman. Salt marsh mosquito ditches as habitat for nekton and implications for restoration. New England Estuarine Research Society. April 2-3, 2009. Salem, MA.
- Daggett, C.T., J.E. Saros. Effects of enhanced nitrogen deposition and changing DOC

- concentrations on phytoplankton in boreal lakes. American Society for Limnology and Oceanography, March 13-18, 2011. San Juan, PR. (59)
- Daggett, C., J.E. Saros. Nutrient limitation patterns in boreal lakes of the U.S.: implications for establishing critical loads of atmospheric nitrogen deposition. American Society for Limnology and Oceanography, June 6-11, 2010. Santa Fe, NM. (59)
- De Luca, M.P. 2012. Presentation at the workshop to integrate scientific communities into a coastal sentinel site network of networks. August 22-23, 2012, Silver Spring, MD.
- De Luca, M.P. 2013. Presentation at the Coastal Program Managers Meeting, February 25, 2013, Washington, D.C.
- De Luca, M.P. 2013. Presentation at the Annual meeting of the National Association of Marine Laboratories. October 30, 2013. Honolulu, HI.
- Dickinson, M. 2012. Sparrow Nest-site selection on Great Duck Island, Maine: influences of habitat and predation. 5th Quadrennial North American Ornithological Conference, August 14-18, 2012. Vancouver, BC. (5)
- Eddy, E.N., and C.T. Roman. 2013. Characterizing the benthic invertebrate communities of the mixed-coarse intertidal habitat in Boston Harbor. New England Estuarine Research Society. April 11-13, 2013. Portland, ME. (79)
- Ellsworth, A., K.E. Strock, B. Gawley, J.E. Saros. Long-term lake monitoring in Acadia National Park. Annual Meeting of the Northeast Regional Air Quality Committee, 2011. Campobello Island, NB. (59)
- Flanagan, C., Eagles-Smith, S. Nelson, D. Evers, A. Jackson, E. Adams, T. Blett, K. Morris. Mercury in the U.S. National Parks: status and effects in biota. International Conference on Mercury as a Global Pollutant, July 28-August 2, 2013, Edinburgh, Scotland. (3)
- Flood, R.D., 2011. Bathymetry. State of the Bay: Past, Present and Future - Revisited, October 20, 2011, Brooklyn College, Brooklyn, NY. (48)
- Furman, B. T., L. Jackson, E. Bricker, M. Waycott, B. J. Peterson. The interactive effects of pollination and seed dispersal distance on the dynamics of sexual recruitment in an establishment phase *Zostera marina* meadow in Long Island South Shore Estuaries. Coastal and Estuarine Research Federation, November 3-7, 2013. San Diego, CA. (52, 53)
- Georgaklis, E. Breeding status, habitat selection, and food preference of Corvids on Great Duck Island Maine. Annual Schoodic Education and Research Center Science Biological Symposium, October 23, 2012. Winter Harbor, ME. (4)
- Groden, E., S.P. Stock, R. Lopez, J. Lund. Investigations into a nematode infecting an exotic invasive ant: new host relationship or hitchhiker across the Atlantic? Annual Meeting of the Society for Invertebrate Pathology, August 11-15, 2011. Halifax, Nova Scotia, Canada. (54)
- Groden, E., K. Bernard, J. Lund. Management of the invasive European fire ant (Hymenoptera: Formicidae) in Acadia National Park. Acadia National Park Science Symposium. 2011. Winter Harbor, ME. (54)
- Groden, E., J. Lund. 2011. Evaluation of a strategy for enhancing natural mortality of European fire ants, *M. rubra*. Acadia National Park Science Symposium. 2011. Winter Harbor, ME. (54)
- Groden, E., J. Lund, K. Bernard. Attempts to manage the invasive European red ant, *Myrmica rubra*. Imported Fire Ant and Invasive Ant Conference, April 16-18, 2012. Nashville, TN. (54)
- Grunzel, D.P., B.J. Olsen. Behavior and timing of fall migrant songbirds. 3rd Annual Northeast

- Regional Migration Monitoring Network Meeting, April 19-20, 2013. Winter Harbor, ME. (56)
- Grunzel, D.P., B.J. Olsen. A test for multiple antipredation strategies in songbirds during migration using phylogenetic contrasts. 131st Stated Meeting of the American Ornithologists' Union and the 83rd Annual Meeting of the Cooper Ornithological Society, August 13-17, 2013. Chicago, IL. (56)
- Hehre, R., C. Hapke, 2009. Development of historical topographic models of the beach/dune system in Northeast Coastal Parks. George Wright Society Conference on Parks, Protected Areas, and Cultural Sites, March 1-5, 2009. Portland, OR.
- Jackson, L. J., B. T. Furman, J. Carroll, B. J. Peterson. *Zostera marina* seed production in patches of varying size and location in Long Island South Shore Estuaries. 42nd Benthic Ecology Meeting, March 20-24, 2013. Savannah, GA. (51)
- Jackson, L. J., B. Furman, J. M. Carroll, B. J. Peterson. Landscape-scale effects of *Zostera marina* seed production in Long Island South Shore Estuaries, NY 41st Benthic Ecology meeting, March 21-24, 2012. Norfolk VA. (51)
- James-Pirri, M.J. Spawning behavior of horseshoe crabs. Green Eggs and Sand Workshop, Cornell Cooperative Extension and the State University of New York. June 3, 2011, Stony Brook, NY. (76)
- James-Pirri, M.J. Movement patterns and spawning dynamics of horseshoe crabs in Pleasant Bay. Massachusetts Audubon Wellfleet Bay Wildlife Sanctuary Horseshoe Crab Conference, April 17, 2010. Wellfleet, MA. (79)
- James-Pirri, M.J. Seasonal movement of the American horseshoe crab *Limulus polyphemus* in a semi-enclosed bay on Cape Cod, Massachusetts (USA) as determined by acoustic telemetry. New England Estuarine Research Society, Oct. 28-30, 2010. Provincetown, MA. (79)
- James-Pirri, M.J. Researching local populations of horseshoe crabs on Cape Cod, Massachusetts. Horseshoe crab conference at Massachusetts Audubon's Wellfleet Bay Wildlife Sanctuary, May 5, 2008. Wellfleet, MA. (79)
- James-Pirri, M.J. Horseshoe crab research. Save the Bay Science Camp for Girls. Save the Bay, Aug. 1, 2008. Providence, RI. (79)
- James-Pirri, M.J. Blood, bait, and birds. The horseshoe crab a multiple use resource. 5th Annual State of Wellfleet Harbor Conference, Nov. 10, 2007. Wellfleet, MA. (79)
- James-Pirri, M.J., A. Leschen, A. Horseshoe crabs as the great unifiers: the first regional New England surveys to gather spawning population data for fisheries management. Cape Cod Natural History Conference, March 14, 2009. West Barnstable, MA. (79)
- James-Pirri, M.J., P. Rafferty. Understanding horseshoe crab population dynamics in New York and New Jersey National Parks. 8th Biennial Planning, Science and Research Conference, Fire Island National Seashore, April 27, 2012. Patchogue, NY. (76)
- James-Pirri, M.J., J. Swanson, C.T. Roman, H.S. Ginsberg, and J. Heltshe. Thresholds of change for nekton and vegetation communities of northeastern US salt marshes. Coastal and Estuarine Research Federation 20th Biennial Conference. November 1-5, 2009. Portland, OR.
- Jacoby, F. Wintering habitat of the common loon (*Gavia immer*). Ecological Society of America, August 1-6, 2010. Pittsburgh, PA. (5)
- Kopera, J.P. The bedrock geology of Boston Harbor and the Outer Harbor Islands. Presented at Boston Harbor Islands Science Symposium, October 19, 2011, Cambridge, MA. (62)

- Leschen, A., M.J. James-Pirri. Horseshoe crabs as the great unifiers: the first regional New England surveys to gather spawning population data for fisheries management. New England Estuarine Research Society, Oct. 15-18, 2008. Block Island, RI. (79)
- McCabe, J.D., B.J. Olsen. A validated model for migratory stopover distribution in North America: identifying generalizable predictors of site use. 3rd Annual Northeast Regional Migration Monitoring Network Meeting, April 19-20, 2013. Winter Harbor, ME. (56)
- McCabe, J.D. and B.J. Olsen. Defining critical habitat for migratory songbirds in the Downeast coastal region of Maine. 2nd Annual Schoodic Education and Research Center Science Symposium, 2012. Winter Harbor, ME. (56)
- McCabe, J.D. and B.J. Olsen. Defining critical habitat for migratory songbirds in the Downeast coastal region of Maine. 5th Quadrennial North American Ornithological Conference, August 14-18, 2012. Vancouver, BC. (56)
- McElroy, A., M. Benotti, G. Edinger, A. Feldmann, C. O'Connell, G. Stewart, R. L. Swanson, and J. Waldman. 2009. Assessment of natural resource conditions: Fire Island National Seashore. Natural Resource Report NPS/NRPC/NRR—2009/139. National Park Service, Fort Collins, CO.
- Morrell, E.H. How snowy owl migration could be influenced by climate change and development along coastal Maine. Poster presented at Ecological Society of America, August 1-6, 2010. Pittsburgh, PA. (5)
- Neckles, H., B. Kopp, B. Peterson, P. Pooler, S. Stevens, 2009. Seagrass monitoring in the Northeast Coastal and Barrier Network. George Wright Society Conference on Parks, Protected Areas, and Cultural Sites, March 1-5, 2009. Portland, OR. (52, 53)
- Neckles, H. A., B. S. Kopp, B.J. Peterson, P.S. Pooler. 2009. Integrating scales of seagrass monitoring. Coastal and Estuarine Research Federation Biennial Conference, November 1-5, 2009. Portland, OR. (52, 53)
- Nielsen, L. Living on the Edge: Gulls and humans in off-shore colonies. Waterbirds Annual Meeting, September 24-29, 2013. Wilhelmshaven, Germany. (4)
- Olsen, B.J., J.D. McCabe. Understanding a continental-scale behavior in an era of climate change. Acadia National Park Science Symposium, 2011. Winter Harbor, ME. (56)
- Olsen, B.J., J.D. McCabe, E.M. Adams, D.P. Grunzel, A.J. Leppold. An assessment of the potential for phenological mismatch in autumnal migratory stopover. 131st Stated Meeting of the American Ornithologists' Union and the 83rd Annual Meeting of the Cooper Ornithological Society, August 13-17, 2013. Chicago, IL. (56)
- Paolucci, A., and M.H. Stolt. Dynamic soil properties in a *Spartina patens* salt marsh subject to increased temperature. Annual Meetings of the Soil Science Society of America, November 3-6, 2013. Tampa, FL. (99)
- Peterson, B. J., A. M. Stubler. Cumulative impacts of multiple stressors on *Zostera marina* populations in New York estuaries. New England Estuarine Research Society Meetings, May 5-7, 2011. Pt. Jefferson, NY. (52, 53)
- Peterson, B. J. The impact of positive interaction between organisms and seagrass populations in New York south shore estuaries. 2011. Department of Environmental Science, University of Virginia. (52, 53)
- Peterson, B. J., A. M. Stubler. Cumulative impacts of multiple stressors on *Zostera marina* populations in New York estuaries. 39th Benthic Ecology Meetings, March 10-13, 2010. Wilmington, NC. (52, 53)
- Peterson, B. J., S. J. Brisbin, B. T. Furman. Effect of a prolonged brown tide (*Aureococcus*

- anophagefferens*) on interannual *Zostera marina* densities within a New York estuary. 39th Benthic Ecology Meetings, March 10-13, 2010. Wilmington, NC. (52, 53)
- Peterson, B. J., S. J. Brisbin, B. T. Furman. Effect of a prolonged brown tide (*Aureococcus anophagefferens*) on interannual *Zostera marina* densities within a New York estuary. 7th Biennial Fire Island National Seashore Planning, Science and Research Conference, April 21-22, 2010. Patchogue, NY. (52, 53)
- Peterson, B. J., A. M. Stubler. Cumulative impacts of multiple stressors on *Zostera marina* populations in New York estuaries. 39th Benthic Ecology Meetings March 10-13, 2010. Wilmington, NC. (52, 53)
- Peterson, B. J., B. S. Rodgers, S. Brisbin, J. Myers. Assessing estuarine condition through water quality and seagrass monitoring at Fire Island National Seashore, NY. Status, Trends, and Conservation of Eelgrass in Atlantic Canada and the Northeastern United States. February 24-25, 2009. Portland, ME. (Invited speaker) (52, 53)
- Powell, M., B.J. Olsen. Changing landscapes, changing climates, and the changing needs of Acadia's tidal-marsh-dependent birds. Acadia National Park Science Symposium, 2011. Winter Harbor, ME. (57)
- Psuty, N.P. Tracking coastal geomorphological change: Collecting geotemporal data sets in the National Parks and Wildlife Refuges, Northeastern USA. Public Lecture, February 23, 2011. Liverpool Hope University, Liverpool England. (25)
- Psuty, N. P. Sediment management: A recurring theme and some potential unique approaches. Liverpool Hope University, University Lecture Series, October 9, 2012, Liverpool, England. (27)
- Psuty, N. P. Erosion as a coastal hazard. Liverpool Hope University, Dept. of Geography Lecture, Oct 22, 2012, Liverpool England. (27)
- Psuty, N. P. Coastal Geomorphology at Aviator Road, Floyd Bennett Field, July 24, 2013, Gateway National Recreation Area, Brooklyn, NY. (27)
- Psuty, N.P., T.M. Silveira. A National Park Service program to monitor coastal topography in the Northeast Coastal and Barrier Network, USA. International Conference on Conservation and Management, April 11-14, 2010. Cascais, Portugal. (25)
- Psuty, N.P., T.M. Silveira. Tracking coastal geomorphological change: An application of protocols to collect geotemporal data sets at the National Level in the US. International Coastal Symposium May 9-14, 2011, Szczecin, Poland. (25)
- Psuty, N.P., T.M. Silveira, Monitoring coastal change in the Northeast Coastal and Barrier Network: A National Park Service science-based program. Association of American Geographers Annual Meeting, April 14-18, 2010. Washington, D.C. (25)
- Psuty, N.P., T.M. Silveira, 2010. A multi-scale monitoring program to measure coastal change, Northeast Coastal and Barrier Network, NPS. Geological Society of America, Northeastern-Southeastern Regional Meeting, March 2010. Baltimore, MD. (25)
- Psuty, N.P., A. Spahn. Regional seamless network monitoring: A Multi-scale monitoring program to measure rates of coastal change. Jacques Cousteau National Estuarine Research Reserve Review, August 18, 2011. Tuckerton, NJ. (25)
- Psuty, N.P., T. Silveira, S. Stevens, D.E. Skidds. Monitoring coastal topography in the Northeast Coastal and Barrier Network. George Wright Society Conference on Parks, Protected Areas, and Cultural Sites, March 1-5, 2009. Portland, OR. (25)
- Rafferty, P., M.J, James-Pirri. Understanding horseshoe crab population dynamics in New York and New Jersey National Parks. The George Wright Society, March 14-18, 2011. New

- Orleans, LA. (76)
- Rafferty, P. and C.T. Roman. Understanding marsh loss in an urban estuary: Jamaica Bay, Gateway National Recreation Area, New York. The George Wright Society Conference on Parks, Protected Areas and Cultural Sites. March 14-18, 2011. New Orleans, LA.
- Rafferty, P., D.R. Cahoon, C.T. Roman, J. Lynch, M.J. James-Pirri, G. Frame. Salt marsh loss and restoration in an urban estuary: Jamaica Bay, Gateway National Recreation Area, New York. Society of Ecological Restoration, Mid-Atlantic Chapter, March 22-24, 2012. Brooklyn, NY
- Rodgers, B. S., M. J. Harke, B. J. Peterson. Eelgrass (*Zostera marina*) growth, photosynthetic efficiency and survival in response to groundwater exposure with nitrate and the herbicide Diuron. 39th Benthic Ecology Meetings, March 10-13, 2010. Wilmington, NC. (52, 53)
- Rodgers, B. S., B. J. Peterson. Impacts of groundwater flow on eelgrass, *Zostera marina*, in New York estuaries. 38th Annual Benthic Ecology Meeting, March 4-7, 2009. Corpus Christi, TX. (52, 53)
- Roman, C.T., J.C. Lynch, and D.R. Cahoon. Monitoring salt marsh elevation change using the Surface Elevation Table (SET) and understanding marsh response to rising sea-level: A field demonstration. 8th Biennial Fire Island National Seashore Planning, Science and Research Conference. April 27-28, 2012. Patchogue, NY.
- Roman, C.T., K. Medeiros, D. R. Cahoon, and J.C. Lynch. Monitoring salt marsh elevation change in the Northeast: Anticipating habitat responses to sea level rise. The George Wright Society Conference on Parks, Protected Areas and Cultural Sites. March 14-18, 2011. New Orleans, LA.
- Roman, C.T., D.R. Cahoon, J.C. Lynch, and K. Medeiros. Salt marsh elevation change: Surface Elevation Tables (SET) as a Long-term Monitoring Approach. Coastal and Estuarine Research Federation 20th Biennial Conference. November 1-5, 2009. Portland, OR.
- Ross, M. E., P.J. Thompson. Geochemistry of sills and dikes of the Boston Harbor Islands and rheomorphic melting of the Cambridge Argillite country rock. Presented at Geological Society of America Northeastern Section, 47th Annual Meeting, March 18-20, 2012, Hartford, CT. Accessible via https://gsa.confex.com/gsa/2012NE/finalprogram/abstract_199887.htm (62)
- Saros, J.E., D.W. Clow, T. Blett, A.P. Wolfe. Critical nitrogen deposition loads in high-elevation lakes of the western U.S. inferred from shifts in diatom community structure. Annual Meeting of the National Atmospheric Deposition Program Scientific Symposium, October 19-21, 2010. Lake Tahoe, CA.
- Saros, J.E., K.E. Strock, B. Gawley, A. Ellsworth. Declining water clarity in Acadia's lakes: Trends and possible causes. Annual Meeting of the Acadia National Park Science Symposium, October 2011. Bar Harbor, ME. (59)
- Shlepr, K. Temporal and spatial aspects of aggressive interactions in nesting gulls. Waterbirds Annual Meeting, September 24-29, 2013. Wilhelmshaven, Germany. (4)
- Shlepr, K. Impact of bald eagle (*Haliaeetus leucocephalus*) predation on herring gull (*Larus argentatus*) survivorship in Maine, USA. 5th Quadrennial North American Ornithological Conference, August 14-18, 2012. Vancouver, BC. (4)
- Silveira, T.M., N.P. Psuty. Measuring geomorphological changes at Sandy Hook, Gateway NRA. Coastal GeoTools 2009. March 2-5, Myrtle Beach, SC. (www.csc.noaa.gov/geotools/sessions/Thurs/H03_Sylveira.pdf) (25)

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Appendix 3: NAC-CESU Online Investigator Questionnaire

The online questionnaire was pre-filled to the best extent possible (e.g., task agreement numbers, funding amount, Agreements Technical Representative Name, start and end date) prior to sending to investigators. This was done to facilitate the online process for principal investigators.

Project Title

Project Description: Brief summary of project

Project Type: Education, Research or Technical Assistance

Disciplinary Focus: Biological, ecological, geology, geomorphology, interdisciplinary, physical, social science.

Project Keywords:

Partner Institution:

Other Partner Institution

Partner Institution Contact Name:

Partner Institution Contact Email:

Partner Institution Contact Phone:

CESU Name:

Sponsoring Agency:

Agreements Technical Representative Name:

Federal Contact Email:

Federal Contact Phone:

Place of Performance – State:

Place of Performance – County:

Place of Performance – Municipality:

Place of Performance - Protected Area:

Start Date:

End Date:

Account Number Type:

Cooperative Agreement, Task, or Account Number:

Federal Funding Fiscal Year:

Amount of Funding:

Secondary Funding Actions

Student Involvement:

Number of Undergraduate Students Funded

Number of Undergraduate Students, unfunded

Names of Undergraduate Students and Departments

Number of Graduate Students

Names of Graduate Students and Departments

Full Ph.D. and Masters Theses Citations

In Progress Citations for Master's and Ph.D. theses

Posters and Oral Presentations

Professional Citations

Other Products

Supporting Project Files

Comments

Appendix 4: NAC-CESU Financials

CESU Grants and Expenses*

Agency: USFWS (FY09)		Overall Total Balance by Account	
Opening Balance	10,000.00	USFWS	569.73
Consultants	1,100.00	NOAA	-91.85
Domestic Travel	0.00	BOEM	626.50
Fringe Benefits-General	1,582.79	DOD	10,000.00
Indirect Cost General	1,404.47	Grand Total	11,104.38
Personnel	5,343.01		
Current Balance	569.73		
Agency: NOAA (FY 10)			
Opening Balance	10,000.00		
Consultants	2,185.00		
Domestic Travel	1,064.50		
Fringe Benefits-General	1,229.21		
Indirect Cost General	1,503.11		
Personnel	4,110.03		
Current Balance	-91.85		
Agency: BOEM (FY 11)			
Opening Balance	10,000.00		
Consultants	0.00		
Domestic Travel	2,638.13		
Fringe Benefits-General	1,229.21		
Indirect Cost General	1,396.13		
Personnel	4,110.03		
Current Balance	626.50		
Agency: NONE (FY 12)			
Opening Balance	0.00		
Agency: DOD (FY 13)			
Opening Balance	10,000.00		
Consultants	0.00		
Domestic Travel	0.00		
Fringe Benefits-General	0.00		
Indirect Cost General	0.00		
Personnel	0.00		
Current Balance	10,000.00		

***URI Accounting**

Consultants include honoraria for presentations at meetings, workshops, etc.

Domestic Travel includes transportation to national meetings, conferences and regional meetings.

Fringe Benefits-General includes health insurance, FICA and a range of benefits required depending upon employee’s status, i.e., temporary, student, faculty, staff, etc.

Indirect Cost General is the equivalent of overhead rate of 17.5%.

Personnel includes temporary (IP-1) employees to facilitate event planning and execution, e.g., meetings, workshops, as well as experts to manage web maintenance, and development of online database.

In-kind Coastal Institute Support

	2009	2010	2011	2012	20113
15% Director Effort (salary+benefits)	32,249.25	31,636.20	31,941.60	31,941.60	32,103.30
10% Office Manager Effort (salary+benefits)	9,158.70	9,368.80	9,368.80	9,476.90	9,623.30
Office Supplies	375.00	425.00	425.00	475.00	678.00
Office Equipment & Services	150.00	150.00	175.00	200.00	225.00
WebEx			613.00		
Computers		2,700.00			
Development of online database				1,200.00	2,000.00
Food					1,479.00
Machlis Reception – speaker NPS Nat'l Office		1,000.00			
Web Hosting	1,000.00	1,000.00	1,000.00	1,500.00	1,500.00
Annual Totals	42,932.95	46,280.00	43,523.40	44,793.50	47,608.60
Overall Total	225,138.45				