

## **NERRS Science Collaborative Progress Report for the Period 9/1/10 through 2/28/11**

**Project Title:** Sustainable Shorelines along the Hudson River Estuary

**Principal Investigator(s):** Betsy Blair, Hudson River NERR, NYS DEC

**Project start date:** 9/15/10

**Report compiled by:** Betsy Blair

### **Contributing team members and their role in the project:**

- Emilie Hauser, NYS DEC Hudson River NERR -- outreach coordination and project coordinating committee
- Ona Ferguson, Consensus Building Institute (CBI) – project integration lead and project coordinating committee
- Stuart Findlay, Cary Institute of Ecosystem Studies -- ecological studies and project coordinating committee
- Nickitas Georgas, Stevens Institute of Technology -- physical forces assessment
- Kristin Marcell, NYS DEC Hudson River Estuary Program and Cornell University -- project coordinating committee and climate change program liaison
- Dan Miller, NYS DEC Hudson River Estuary Program -- demonstration project development, ecological studies, and project coordinating committee
- Jon Miller, Stevens Institute of Technology -- physical forces assessment, demonstration project, and project coordinating committee
- Dave Strayer, Cary Institute of Ecosystem Studies -- ecological studies and project coordinating committee
- Kathie Weathers, Cary Institute of Ecosystem Studies – project integration and project coordinating committee

### **A. Progress Overview:**

The purpose of the Hudson River Sustainable Shorelines Project is to provide science-based information about the best shoreline management options for preserving important natural functions of the Hudson River Estuary's shore zone, especially as sea level rise accelerates and storms increase in intensity. With the ongoing input of decision-makers and intended users of project results, the project team is generating new information about engineering performance, ecological tradeoffs, economic costs, projected river conditions, legal and regulatory opportunities, and the needs and priorities of key audiences. With NERRS Science Collaborative funding, the shorelines project team will conduct studies to 1) test how shoreline structure affects ecological services, 2) expand knowledge of physical forces impinging on shorelines, 3) construct a demonstration site, and 4) and develop a decision support tool. The project will involve and foster collaboration with shorelines decision-makers, with the ultimate goal of providing useful products, informing decisions, and influencing outcomes.

During this reporting period, we planned to launch the project by developing subcontracts with three project partners and beginning project implementation of the objectives. Progress was made on subcontracts, assessments of ice impacts, identification of potential demonstration sites, planning for 2011 field research, and outreach planning.

### **B. Working with Intended Users:**

#### *Progress:*

In recent phases of the Sustainable Shorelines project, but not yet under NSC funding, we integrated intended users into the project through focus groups, advisory committees, project team participation, interviews, and case studies. During this reporting period (although still under separate funding), two studies were conducted to gather information to better help those

involved in technical research understand who that information should be designed to reach, where the key decision points are, and how information is utilized on the ground. In summer and fall 2010, CBI staff gathered data on five case studies of Hudson shoreline development projects to develop stories about community decision-making. Those cases were revised and honed in the fall, and CBI drafted a final report summarizing lessons learned. In the fall and winter, Shawn Dalton, of Thrive Consulting, interviewed about 25 experts and consultants who advise or are otherwise involved in shoreline decision-making. She prepared a draft report and presented findings to the Project Coordinating Team in December, and based on that feedback, conducted several additional interviews and wrote a final report.

*Lessons learned:*

We learned a great deal that is relevant to future product development and outreach, some of which affirmed our existing thinking, some of which was new information. We affirmed that public and private land owners rely heavily on engineers and consultants to manage the permit process. We hadn't realized, however, the limited degree of information sharing among competing professionals, some of whom are seeking to develop niche consulting. Our outreach will need to find a way to help create networks that will allow knowledge diffusion and support mainstreaming of innovative treatments. The findings of both studies are summarized in Attachment 1.

*Next six months:*

- Convene Project Team on April 25, 2011.
- Convene Advisory Committee on May 6, 2011.
- Meet with state and federal regulatory staff (4 meetings) regarding new habitat information, and test knowledge and/or interest in sustainable shoreline project outcomes.
- Meet with potential demonstration site partners.
- Meet with other shoreline advocates along Hudson River Estuary and in New York Harbor to explore interest in creating a network of demonstration sites.

C. Progress on project objectives for this reporting period:

1) *Shoreline structure effects on ecological services*

During this period, this ecological group (Dave Strayer, Stuart Findlay, and Dan Miller) began to plan the summer, 2011 field campaign.

In the next 6 months, this project group will be in the field intensively sampling fish and plant communities at 20 sites along a diverse range of built shorelines along the Hudson River Estuary to elucidate how their physical structure affects ecological function.

2) *Physical forces on shorelines*

During this period, the engineering group (Jon Miller and Nickitas Georgas) gathered historical information about ice extent, thickness, and effects along the Hudson River Estuary, and determined that ice cover has dampened tidal amplitude.

In the next 6 months, this group will refine the NYHOPS hydrological model and collect field data on wake energy.

3) *Demonstration site*

Dan Miller identified and visited five candidate demonstration sites for innovative shoreline treatments, all of which are located on public or conservation property. He met with land owners and established that all would be willing partners. These sites represent a range of

physical and biological conditions, and each presents interesting opportunities and challenges for creating a demonstration site. One of these sites will be selected for NSC project advancement, and funding will likely be sought elsewhere to advance additional demonstration projects. Results from intended user surveys (above) and field reconnaissance has led us to conclude that it would be highly desirable to develop several demonstration sites (of different techniques and in different locations) through a network of partnerships. This will allow the project to address the wide range of conditions present along the Hudson River Estuary, as well as the variety of community and user priorities for shorelines.

In the next 6 months, this group will consult with the Project Team and Advisory Committee about this project. Demonstration project engineering advisor Jon Miller and Dan Miller will visit as many sites as possible, and develop preliminary plans for at least one demonstration. Our decision about which demonstration project to advance with NSC funding will necessarily be driven by funding constraints and opportunity, as well as user preferences.

#### 4) *Decision support tool*

During this reporting period, we gathered a few examples of decision support tools as possible models for our project. We also made plans to host a TIDES intern (Zack Steele) from June to December, 2011, and intend for him to conduct research on possible models.

In the next 6 months, we anticipate having Zack conduct research on decision support tool models, and convening a special forum of intended users and scientists to discuss that the options are, and what would be most useful.

#### D. Benefit to NERRS and NOAA:

- Shoreline case study report and expert interview report

E. Describe any activities, products, accomplishments, or obstacles not addressed in other sections of this report that you feel are important for the Science Collaborative to know.

- None.