

**NERRS WATCH (WATERSHED ACTIONS TO CLIMATE HEALTH)
“A New England Climate Change Internship Program
from the National Estuarine Research Reserve System”**

2011 Application Guidelines

Internship Rationale:

Climate change issues are complex and include the potentially serious coastal impacts of rising sea level, rapidly warming nearshore waters, increasing storm frequency and intensity, and ocean acidification. With a long history and heritage of coastal commerce and maritime innovation, the ability of New England’s coastal communities to adapt, mitigate and prosper in light of climate change impacts on our coasts and estuaries will require pioneering problem solvers. The next generation of leaders will need to address emerging climate change impacts on estuaries by drawing upon a broad range of disciplines and technologies.

The NERRS WATCH internship will help to bridge the gap that exists between the realm of academic study and the application of practical problem solving skills. NERRS WATCH interns will have the opportunity to work side-by-side with researchers, educators, and land managers involved in the innovative and cutting edge application of science and technology to the challenge of improving New England’s environmental and human health in the face of climate change. Interns will also apply the knowledge and skills they are learning in the classroom to complete an interdisciplinary independent intern project.

National Estuarine Research Reserve System Description:

The National Estuarine Research Reserve System (NERRS) is a network of protected areas established for long-term research, education and stewardship. This partnership program between NOAA and the coastal states protects more than one million acres of estuarine land and water that provides essential wildlife habitat; offers educational opportunities for students, teachers and the public; and serves as a living laboratory for scientists.

Each reserve supports a wide range of beneficial uses of ecological, economic, recreational, and aesthetic values which are dependent upon the maintenance of a healthy ecosystem. The sites provide habitats for a wide range of ecological, commercial and recreationally important species of fish, shellfish, birds, and other aquatic and terrestrial wildlife. Each reserve has been designed to ensure its effectiveness as a conservation unit and, as part of a national system the reserves collectively provide an excellent opportunity to address estuarine and coastal management issues of national significance relating to the consequences of global climate change.

The NERRS WATCH Program was designed to provide participants with have an opportunity to work in a variety of coastal and estuarine settings at one or more of New England's National Estuarine Research Reserves as appropriate for their project design. However, in the 2011 pilot program year, Rhode Island (Narragansett Bay) is the only participating reserve hosting an intern. Projects may be designed to include study sites at the other New England reserves [Massachusetts (Waquoit Bay), New Hampshire (Great Bay), and Maine (Wells)] but the logistics of transportation between sites and/or housing would have to be coordinated by the intern.

I. Internship Opportunity Description

A. Internship Program Objective

The objective of the NERRS WATCH (**W**atershed **A**ctions **T**o **C**limate **H**ealth) Program is to provide a framework through which undergraduate students from diverse academic backgrounds may enhance their educational experience through practical assignments related to climate change and its impacts on estuarine and coastal environments.

All intern projects should be designed to assist the NERRS in our efforts to meet one or more climate change strategic plan goals. The complete NERRS climate change strategy document is available on-line at:

<http://www.nerrs.noaa.gov/DOC/PDF/Background/NERRSClimateChange.pdf>

B. Program Priorities

The NERRS WATCH Program is designed to address the National Estuarine Research Reserve System climate change strategic plan goals. These goals, which reflect the three themes of the Intergovernmental Panel on Climate Change (IPCC), are:

- 1) Contribute to scientific understanding of climate change and monitor ecosystem changes;
- 2) Assess climate change impacts on human and estuarine ecosystem communities, vulnerability of these communities, and their capacity for adaptation and mitigation;
- 3) Provide educational opportunities and training related to effects of climate change on human and estuarine systems to increase public awareness and foster behavior change.

Students are encouraged to develop their own original ideas and proposals; alternatively proposals can link with ongoing projects that address the above goals. In 2011, these projects include:

Related to Goal #1

- 1) Contribute to the ongoing development of salt marshes into sentinel sites for monitoring the long-term effects of climate change. Examples include vegetation and

hydrology monitoring; sediment elevation table installation and monitoring; and identification and initiation of additional monitoring components.

- 2) Identify species that are susceptible (and are therefore effective bioindicators) to climate change and conduct surveys to establish baseline conditions or to detect change (if prior surveys exist).

Related to Goal #2

- 1) Identify areas within reserve properties (or throughout the reserve watershed) that are most vulnerable to sea level rise and quantify the costs and benefits associated with adaptation.
- 2) Research and compile local and regional case studies of how communities have incorporated climate change adaptation into their land-use plans (e.g., comprehensive plans, subdivision regulations, zoning ordinances, etc.)

Related to Goal #3

- 1) Conduct an extensive literature review and/or capture anecdotal evidence by recording local narratives to document climate change impacts.
- 2) Conduct energy audits of past and present consumption of heating oil, electricity and/or natural gas to assess how much power the reserve uses, and offer specific strategies to help the reserve lower its energy consumption and carbon footprint.

Proposals must:

- address one or more of the NERRS climate change strategic plan goals, identified above;
- and**
- include a science translation product appropriate for distribution to a broad audience (e.g., podcasts, posters, interpretive publications, interpretive signage, multimedia tools, models of climate processes, press releases, website/newsletter contents, brochures, etc.)

Note: One aim of this internship is to address regional and local issues unique to the environments of the reserve. It is strongly suggested that prior to submitting an application, applicants contact the host reserve (see Section VI) for specific information about the reserve and their accompanying research needs and priorities as they relate to this announcement.

II. Internship Support

A. Funding Availability

Although the intern position is unpaid, a modest stipend (approximately \$200/week for ten weeks) and housing is available. Students may wish to conduct this project within the framework of an independent study program to earn college credit. This is the responsibility of the applicant.

B. Project Period

This program announcement is for projects to be conducted by undergraduate students through a single summer season based at the reserve(s), and a fall semester spent back at school independently synthesizing results and creating the required translation product. The anticipated start date for the reserve-based summer season is June 1, 2011. Students may submit a multi-year project proposal (to include required program elements annually); however, even if selected in year one, students must re-submit their project in subsequent years to the NERRS WATCH Program and participate in the same competitive process for continuation of their project.

C. Reserve Personnel Support

Appropriate host reserve staff will be available to serve as project mentors. As each reserve has a complement of staff addressing specific focus areas (research, education, stewardship, coastal decision-maker training), applicants will need to contact Dr. Kenny Raposa (Kenny@nbnerr.org) to discuss which focus area and staff member would be best suited to mentor their specific project.

Additional on-site reserve personnel may be available to provide limited logistical support for projects in the form of manpower, equipment, supplies, etc. If applicable, requests for reserve support services should be discussed with the proposed project mentor and approved by the reserve manager prior to application submission and intern project selection.

Prior to initiating the project, the intern will also be required to contact their project mentor to coordinate all other on-site aspects of the project, including where applicable, the location and establishment of sampling sites, projected sampling dates, accommodation reservations, etc.

D. Equipment and Supplies

To the extent possible, participating reserve(s) will supply the necessary equipment and supplies for project completion. Applicants requiring equipment that does not exist at the participating reserve(s) and which is essential for the successful completion of the project may

need to identify alternative means for equipment purchase and/or loan prior to their project start date.

III. Eligibility Information

A. Eligible Applicants

Climate change investigations and outreach products are typically multi-disciplinary. For this reason, internship applicants are encouraged to submit proposals for individual or collaborative projects that bridge disciplines. Appropriate fields of study may include (but are not limited to): climate science, marine science, wildlife ecology, forestry, botany, conservation biology, environmental engineering, hydrology, geology, science education, environmental education, planning, natural resource science, journalism, public health, political science, environmental policy, economics, communications, marketing, and atmospheric science.

Students must be admitted or enrolled in a full-time undergraduate degree program at an accredited university in order to be eligible to apply. Students should have completed a majority of their undergraduate course work at the beginning of their fellowship. Minority students are encouraged to apply.

Interns accepted to the NERRS WATCH Program will be required to:

- 1) As a component of their full-time internship responsibilities, interns will work with their mentor at the host reserve to develop a plan (relevant to the student's project or otherwise) to participate in the reserve's research and/or monitoring, stewardship, education, or coastal training programs for a minimum of 10 hours per week.
- 2) Submit a final report (see Appendix 1) to the host reserve and to their undergraduate advisor.
- 3) Acknowledge NERRS support in all relevant presentations and publications. In addition, interns are strongly encouraged to share final project reports/products within the NERRS community and among NERRS program partners via conference presentations, posters, and/or other communication tools such as interactive web seminars.

The participating reserve(s) in the 2011 NERRS WATCH Program maintain the right to immediately halt activity under the internship if it becomes obvious that individual project activities are not fulfilling the mission of the National Estuarine Research Reserve System and the NERRS WATCH Program.

IV. Application and Submission Information

A. Content and Form of Application

Receipt of all applications will be acknowledged via email. Please note that it may take several days to confirm receipt of a complete application or reject an incomplete application. Please allow seven to ten days ahead of the application due date for these notifications.

Subsequently, applications will be merit reviewed and students will be notified via email as to

whether or not their project proposal has been selected. Outlined below are the required elements for a complete application.

It is highly encouraged that all pieces of the application be submitted as a single document (in MS Word [.doc] or Adobe [.pdf] format).

PLEASE USE THE ORDER SPECIFIED BELOW – ELEMENTS 1-3 – WHEN CONSTRUCTING YOUR PROPOSAL.

1. Cover letter

The cover letter should be no longer than 2-pages, single-spaced in 12-point Times New Roman font with one-inch margins. The letter should indicate internship project interests, how the proposed internship project fits into the applicant's degree program, current academic status, and career goals and objectives. Additionally, cover letter should address the following:

- How do you expect your NERRS WATCH internship project will enhance your ability to problem-solve for challenges created by coastal climate change impacts?
- How will your NERRS WATCH internship project contribute to your familiarity with the approaches of other disciplines in solving climate change issues?
- Describe any experience that has helped to prepare you for the responsibility of this internship.
- Describe how you expect your internship project will be useful to you in your major field of study and how it will prepare you for your intended career path

2. Internship project proposal

The internship project proposal must be double-spaced in 12-point Times New Roman font with one-inch margins. The proposal must include the following sections labeled A-F:

A. **Title page** which must include the items below in the following order:

- Project Title;
- Name, Address, Telephone/Fax number, Email Address
- Requested Time Frame (project start/end dates)
- Name of Educational Institution
- Degree being sought and field of study
- Advisor Name, Address, Telephone/Fax number, Email Address
- Reserve(s) where the internship project is to be conducted (if the project is being performed at multiple reserves please indicate which reserve is the primary/host reserve and which are secondary sites);
- Focus area that project proposal is addressing (see Section I. B)

B. **Project Description.** The project description must be limited to 4 double-spaced pages excluding any figures. The main body of the proposal must include a detailed statement of the work to be undertaken and the following components:

- *Introduction.* This section should introduce the project and local environment. It should include a brief description of the climate change related problems and NERRS system climate change priorities (See NERRS Climate Change White Paper available on-line at: <http://www.nerrs.noaa.gov/doc/pdf/background/NERRSClimateChangeOnePager.pdf>). This section should identify the primary hypotheses and/or the purpose statement of the internship project.
- *Methods.* This section should state the method(s) to be used to accomplish the specific internship project objectives, including what, when, where, and how the project is to be implemented. Methods and research techniques should be described concisely.
- *Project Significance.* This section should provide a clear discussion of how the proposed project addresses coastal or estuarine impacts of climate change and will enhance or contribute to improving the state of knowledge of the impacts of climate change on estuaries. Applicability of project findings to other Research Reserves and coastal areas in New England should also be mentioned.
- *Science Translation Product.* This section should provide a clear outline of how you intend to translate and interpret the outcomes of your project to reach a broad audience.

C. **Project Schedule.** This schedule should show, in table form, anticipated dates for completing critical milestones of the project. Use “Week 1, Week 2, etc” rather than specific dates when preparing these tables.

D. **Personnel and Project Management.** The proposal must include the names and pertinent expertise of relevant faculty advisors and how they will participate in the management of this project.

E. **Specialized Equipment / Supplies.** If applicable, the proposal must list any specialized lab or field equipment/supplies necessary for project completion and whether these materials are available at the participating reserves. If equipment is not available at the reserve(s), please include an explanation of how it will be obtained.

3. Letter of support and recommendation from the student's undergraduate advisor

Letter of support and recommendation e-mailed directly from the student's advisor to Donna Bains at Dbains@beld.net that includes a) a description of the advisor's contribution (financial and otherwise) to the student's studies, b) an assurance that the student is in good academic standing, and c) any other recommendations the advisor offers for the applicant.

B. Application Submission

Completed applications should be submitted electronically as an e-mail attachment to Donna Bains at Dbains@beld.net.

Application materials will be reviewed for completeness and applicants will be notified of receipt within seven to ten days.

All materials must be received no later than 12:00 pm (EST) March 20, 2011.

V. Application Review Information

A. Evaluation Criteria

Proposals will be evaluated on the basis of the following criteria at the indicated weights:

1. Quality of project and applicability to NERRS WATCH Program priorities (60 percent)
2. Statement of personal goals, objectives and purpose in the cover letter (15 percent)
3. Creative and innovative nature of science translation piece (15 percent)
4. Recommendation and endorsement from undergraduate advisor to include academic record and standing (10 percent)

B. Review and Selection Process

Once applications have been received, an initial administrative review will be conducted to determine compliance with requirements and completeness of the application. Subsequently, a review team from the reserve will evaluate the proposals for project merit. The merit reviewers' ratings will be used to produce a rank order of the proposals. Interns and internship project proposals will be accepted as reserve resources allow.

C. Anticipated Announcement Date

Applicants will be notified of acceptance decisions via email by April 20, 2011.

VI. NERRS WATCH Program Contacts

For general questions regarding the program and application process, please contact Donna Bains via email at Dbains@beld.net.

For further information on specific NERRS WATCH internship project opportunities at the New England National Estuarine Research Reserves, applicants are encouraged to visit individual reserve websites and speak with the NERRS WATCH contact person listed below.

2011 NERRS WATCH Internships are being hosted at the following sites:

NERR Site	Website	Lead NERRS WATCH Program Staff	Contact Person
Narragansett Bay, RI	www.nbnerr.org	Kenny Raposa, Research Coordinator	Kenny@nbnerr.org ; (401) 683-7849

Additional 2011 NERRS WATCH Internship study sites may be available at the following sites:

NERR Site	Website	Lead NERRS WATCH Program Staff	Contact Person
Waquoit Bay, MA	www.waquoitbayreserve.org	Chris Weidman, Research Coordinator	Chris.Weidman@state.ma.us ; (508) 457.0495 x 105
Wells, ME	www.wellsreserve.org	Suzanne Eder, Education Director	Suzanne@wellsnerr.org ; (207) 646-1555 x 116
Great Bay, NH	www.greatbay.org	Rachel Stevens, Stewardship Coordinator	Rachel.Stevens@wildlife.nh.gov ; (603) 778-0015

APPENDIX 1.

GUIDELINES FOR PREPARING NERRS WATCH PRODUCTS

Guidelines for Science Translation Piece

The science translation piece of the NERRS WATCH internship must be a product that clearly and concisely explains the purpose and outcome of the intern project to non-science audiences. The media employed and creative development methods used are at the discretion of the student intern and can result in any number of multi-media product types. Possible formats for the science translation product include, but are not limited to podcasts, videos, posters, newsletter articles, brochures, interpretive signs, press releases, web pages and digital animations appropriate for use on the web.

For example, an intern may want to interpret their project using a podcast. To create this type of science translation product, throughout their project the intern would need to create a storyboard, write a script, record conversations or interviews with researchers and experts, capture sound bytes from the field and narrate a final podcast that could be disseminated via the reserve's website.

In another example, an intern might wish to create an interpretive sign that could be fabricated and posted in an outdoor setting or in the visitor center at the reserve. This would involve writing interpretive copy and developing graphics and images to explain the internship's purpose and outcome. These materials would then need to be graphically laid out in a captivating manner and packaged for printing in a format such as PDF. The PDF would be the final product in this example.

While staff at the reserve will be able to lend some level of expertise in the development of the science translation piece, interns should assume that highly technical assistance will not be available at the reserve and should be sought after elsewhere. This includes the availability of staff with graphic or digital product development skills, equipment including video cameras and sound recorders, and advanced level software programs such as Macromedia Flash or video editing software.

Guidelines for Final Reports

In addition to the science translation product, interns will be required to submit a final report to both their reserve mentor and their educational institution advisor. The purpose of the final report is to describe the activities undertaken throughout the project period and summarize the results. Final reports must be submitted as an electronic version via email in MS word (.doc) or Adobe (.pdf) format, or CD.

The final report is due by the end of the 2011 fall semester and should include the following:

- **Title page:** The title of the project should be followed by the name(s) and address(es) of the investigator(s)/author(s), the date (month and year) of submission, and the name of the National Estuarine Research Reserve where the work was conducted. The title may be other than what was given to the project upon application, as long as it accurately describes the project.
- **Abstract and key words:** A one-paragraph abstract, of no more than 200 words, should be included on a separate page in MS word (.doc) or Adobe (.pdf) format. The abstract should summarize the project, including the problem, the methods, the results, and any conclusions, particularly as they apply to coastal management. The author(s) should bear in mind that the abstract may be printed or appear in Estuarine Reserves Division or National Estuarine Research Reserve documents, databases or websites. At the bottom of the abstract page a list of three to ten key words should be given. These key words will be used in the index of the appropriate synthesis document.
- **Text:** The text should be divided into Introduction, Materials and Methods, Results, Discussion, Literature Cited, and Acknowledgment sections, etc. as appropriate. Sub-sections may be used as needed. The report should give a complete and thorough presentation of the work. Specifically, a full description of methods and a greater elaboration of the significance of the results and their importance to the management of coastal resources should be included. All text should be double spaced.
- **Appendices:** Appendices should be used to present actual data and measurements made during the study. Only summaries of the data should be presented in the text. In addition, any other materials not appropriate for inclusion in the main text, such as computer programs or models generated, should be appended to the report.