

## **POSITION ANNOUNCEMENT:**

### **GEORGE MELENDEZ WRIGHT INITIATIVE FOR YOUNG LEADERS IN CLIMATE CHANGE**

The National Park Service (NPS) is pleased to announce the *George Melendez Wright Initiative for Young Leaders in Climate Change* (YLCC) to provide a pathway for exemplary students in higher education (graduate students and advanced undergraduate students) to apply their skills and ideas to park-based challenges and solutions. The Initiative offers 12-week paid internships which allow students to gain valuable work experience, explore career options, and develop leadership skills through mentorship and guidance while helping to advance the NPS response to climate change. Successful students may be eligible for non-competitive hire into federal positions for which they qualify following completion of all academic requirements.

---

### **Characterizing Ocean Acidification and Vulnerability Risk to Marine Organisms**

Olympic National Park  
Port Angeles, WA

Ocean acidification (OA) is a climate change impact resulting from anthropogenic increases in atmospheric carbon dioxide and eutrophication of nearshore waters. Decreased pH levels affect the ability of marine organisms to build and maintain shells and to efficiently conduct basic metabolic processes. The magnitude and seasonal dynamics of reduced pH levels are spatially variable, dependent upon regional oceanographic processes and the extent of coastal human development. The intertidal biological communities of Olympic National Park (OLYM) and San Juan Island National Historical Park (SAJH) are exceptionally diverse and highly susceptible to impacts of OA. The coastal environment of OLYM and the Salish Sea of SAJH are dominated by different oceanographic processes and human influences, which may result in different OA dynamics and impacts. The NPS mission is to conserve these vital coastal resources in the face of climate impacts such as OA. To fulfill this mission, we must understand the nature of OA and its biological impacts in order to develop adaptation and mitigation strategies. Equally important is the need to communicate the nature of these impacts to the American people who set aside these resources for protection in the National Park system.

#### **PROJECT DESCRIPTION**

The goal of this project is to integrate an Intern into an on-going program to monitor OA and intertidal biological communities in OLYM and to extend the OA monitoring program to SAJH. The intern will work directly with the program lead and other staff in both the field and the laboratory. The intern will deploy, maintain, and download data from intertidal instrumentation that monitors nearshore pH, salinity and temperature. Instruments have been installed in OLYM since 2010, however, in 2015 next-generation instruments will be installed in both OLYM and SAJH. The intern will also collect field data on rocky intertidal community structure at 4 open coastal sites in OLYM and 2 sites in SAJH as part of the NPS North Coast and Cascades Network Inventory and Monitoring Intertidal Program. In the lab, the intern will analyze new and historical data to identify trends in OA and assess the vulnerabilities of rocky

intertidal communities at OLYM and SAJH. These NPS units are ideally situated to assess how OA is impacting vital regions within the Pacific Northwest, and the intern's work will directly contribute to our understanding of the dynamics and impacts of OA in the Pacific Northwest.

Specific tasks and products the intern will complete include:

- Assist in the field implementation of OA instruments.
- Assist in the field conduct of rocky intertidal community monitoring at OLYM and SAJH.
- Download data, conduct QA/QC procedures, and enter data into MS-Access databases.
- Analyze current and historical OA and rocky intertidal community structure data to characterize seasonal and annual trends in OA, and assess potential vulnerability of rocky intertidal communities at both OLYM and SAJH.
- Write a final project report describing goals, methods, results, and recommendations for future work.
- Write a 2-page NCCN-SLN Resource Brief summarizing the internship project.
- Develop a 20-30 minute PowerPoint presentation summarizing the internship project.

## **QUALIFICATIONS**

The successful intern will be either an upper-level undergraduate or graduate student interested in conducting research (i.e. senior thesis, M.S. or Ph.D) on Ocean Acidification.

Required skills include:

- A basic understanding of OA and the current OA literature.
- Undergraduate coursework in marine ecology and/or an undergraduate degree in ecology or environmental science.
- Coursework or demonstrable experience in marine ecology.
- Coursework in statistical analysis.
- Demonstrable backcountry hiking and camping (i.e. leave-no-trace) skills
- Experience with MS-Excel, MS-Access, and statistical analysis software.
- Experience with water quality monitoring instruments (e.g. YSI, Hydrolab, Seabird)

Desired skills include:

- Detailed knowledge of marine invertebrate and macroalgal taxonomy of the Pacific Northwest intertidal zone.
- Experience with pH monitoring equipment such as laboratory pH instruments and field instruments (e.g. SeaFETs, SAMIs, etc.)

## **LEADERSHIP DEVELOPMENT**

The intern will work directly with the supervisor and other NPS staff in both the field and the laboratory, taking a lead role in the further development and implementation of our OA monitoring program. This work requires situational problem-solving and critical thinking to ensure instrument functionality in a

physically challenging environment. The intern will deploy and maintain OA instruments, in addition to conducting QA/QC procedures and data analyses that require analytical thinking. Characterization of rocky intertidal community structure at OLYM and SAJH follows an established protocol requiring vigilance to ensure data quality. Park staff will work daily with the intern to foster leadership skills. The intern is expected to be self-starting, enthusiastic, and motivated. By the end of the internship, the intern will have acquired the skills and confidence to conduct cutting-edge climate change science in both challenging field and laboratory environment. In addition, the intern will further hone their communication skills through the development of an interpretive outreach strategy in collaboration with park interpreters to make results accessible to internal and external audiences. This project will provide the intern the opportunity to conduct research on one of the most pressing marine climate change challenges, and will serve as a jumping-off point for a promising career in marine science. The real-world problem solving and communication skills acquired during this internship will prove valuable for a future career as an environmental scientist working in federal land management agencies.

### **DATES OF POSITION**

The approximate start tenure of this internship is from May 31, 2015 to August 22, 2015. Start and end dates are flexible, but a minimum of 12 weeks of full-time work is required. There is potential for an extension of the internship through September 2015 dependent upon funding availability.

### **COMPENSATION**

This initiative supports one student at \$14 / hour for 12 weeks, or 480 hours.

### **HOUSING**

Housing will be provided within Olympic National Park at the Lake Crescent Natural Resources Laboratory for the duration of the internship.

### **WORK ENVIRONMENT**

The work environment for this internship will include field sites on the Olympic and San Juan Island coast, and in the Lake Crescent Natural Resources Laboratory at Olympic National Park. The outer Olympic coast is a rugged, wilderness field environment that requires the ability to carry a backpack, hike, camp, and work in a remote, potentially wet environment. The intertidal zone of San Juan Island is more accessible, but the rocky intertidal terrain of both can be slippery and hazardous. The intern will undergo a safety training program to prepare for the rigors of the coastal Pacific Northwest field environment. Specialized field gear (e.g. foul weather gear, rubber boots) will be provided for the intern. Office space, computer access, etc. is available at the Lake Crescent Natural Resources Laboratory.

### **CONTACT INFORMATION**

Supervisor Name: Dr. Steven C. Fradkin

Email: Steven\_Fradkin@nps.gov

Phone: (360) 928-9612