

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.

Plant Community Shifts and Diversity Changes in Response to Soil Moisture Changes

Saguaro National Park
Tucson, Arizona

Saguaro National Park was established to protect its unique natural resources, especially the saguaro and other plants. High elevation sites at Saguaro National Park are experiencing multiple climate change factors including altered precipitation regimes and increased temperatures. Native plant communities are also changing, including declines in native diversity, range shifts, loss of species, and increases in non-native plants. The apparent extirpation of several high-elevation wetland plants from the park has been a wake-up call to park staff. However, the mechanisms behind these community changes remain unknown and it is difficult to forecast future plant responses to climate changes. The goal of this internship is to identify the drivers of shifts in community structure as well as the biological mechanisms that promote non-native species invasions. This knowledge will help guide interpretation of and adaptation to climate change in Saguaro National Park.

PROJECT DESCRIPTION

The intern will revisit vegetation plots and conduct surveys to determine community composition shifts, identify diversity changes, and evaluate environmental conditions. He or she will collect functional trait data (such as growth rates, photosynthetic responses to environmental variation, water-use efficiency, etc.) on native and non-native species that will be used to evaluate compositional trends and responses to environmental conditions. He or she will also conduct analyses on existing datasets to evaluate historical patterns of plant responses to environmental drivers, then work in collaboration with NPS biologists to build models that will help predict diversity responses and susceptibility to non-native invasions under climate change scenarios. Finally, he or she will reevaluate existing monitoring protocols to ensure future monitoring accurately captures responses to climate change.

The intern will work closely with Saguaro National Park resource managers and Sonoran Desert Network (SODN) biologists. The final results are expected to be presented as an oral presentation to NPS

resource managers and staff. Results are also expected to be published in a peer-reviewed journal after the internship is complete. This work will directly inform NPS researchers by explaining historical changes that have occurred, the current state of change, and future expectations given model predictions.

QUALIFICATIONS

The most qualified applicant will have a strong background in ecology (such as an MS in environmental science or related field). He or she should be comfortable working independently in remote, rugged backcountry conditions, including experience working in extreme temperatures and carrying a heavy backpack (50+ lbs) in the backcountry. He or she should also have experience conducting vegetation surveys in high elevation systems. Coursework in plant ecology and ecophysiology is required. Fieldwork experience conducting physiological measurements on plants and collecting soil data is important. Intern should be able to operate leaf promoters and portable photosynthesis machines. Familiarity with the plant species and ecology of the Sky Island area in southern Arizona is ideal. He or she should have excellent writing and presentation skills and the ability to work both independently and as a member of a team with a diversity of backgrounds and interests.

LEADERSHIP DEVELOPMENT

The intern will work with Don Swann, Biologist at Saguaro National Park, and Andy Hubbard, Network Coordinator with the Sonoran Desert Network, as well as other SAGU and SODN staff. Don and Andy have more than 30 years combined experience in mentoring young scientists in developing scientifically-based approaches to management issues in national parks. We will meet initially with the intern to establish a detailed work plan, and meet regularly throughout the internship to evaluate progress, re-assess goals, and provide feedback. The intern will work along-side a range of other staff including not only biologists but other scientists and park staff such as wilderness rangers. He or she will gain leadership experience by working closely with undergraduate interns, and gain valuable field and ecological modeling skills. He or she will present final results in an oral presentation to park and SODN staff.

DATES OF POSITION

This position is scheduled to start on June 22, 2015 and run through September 15, 2015. However, these dates are flexible, and there may be opportunities to extend the internship if other funding becomes available.

COMPENSATION

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

HOUSING

Housing at the NPS Desert Research Learning Center will be provided. This is a comfortable indoor space within Saguaro National Park, with a private bedroom, shared bathroom, and communal kitchen and other facilities.

WORK ENVIRONMENT

Saguaro National Park is located in southern Arizona. Although high elevation areas in the park can be cooler than the desert, very long hikes are required to reach these wilderness areas. The park in summer is hot, the terrain very rugged, and there are many inherent dangers including venomous animals and spiny plants. The internship will be up to 50% field work. In the office, the intern will work at the Desert Research Learning Center (located within the park) and share offices with Sonoran Desert Network staff. He or she will work with a young, motivated team of biological technicians and interns.

CONTACT INFORMATION

Don Swann, Don_Swann@nps.gov, (520) 733-5177