POSITION ANNOUNCEMENT:

GEORGE MELENDEZ WRIGHT INITIATIVE FOR YOUNG LEADERS IN CLIMATE CHANGE

The National Park Service (NPS) is pleased to announce the 2017 *George Melendez Wright Initiative for Young Leaders in Climate Change* (YLCC) to provide a pathway for exemplary students in higher education (graduate students, advanced undergraduate students, and recent graduates) 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.

IDENTIFICATION, INVENTORY, AND CHARACTERIZATION OF VERNAL POOLS TO ASSESS VULNERABILITY TO CLIMATE CHANGE

Great Lakes Research and Education Center, Indiana Dunes National Lakeshore
Porter, Indiana

INTERNSHIP BLURB

Identify vernal pools in the Great Lakes region and assess their vulnerability to climate change. Intern will research assessment methods, conduct field work, and compile and integrate data from various sources.

INTERNSHIP PROJECT BACKGROUND

Vernal pools are essential components of Great Lakes forest ecosystems, support many rare plants, and provide critical habitat and breeding grounds for many unique invertebrate and amphibian species adapted to temporary and variable hydroperiods. Changes in precipitation regimes, temperatures, and evapotranspiration rates associated with climate change threaten the existence of these vernal pools and could have a significant impact on the survival of species they support. Vernal pools are known to occur at several Great Lakes national parks, although their locations, distributions, and characteristics are unknown. Documenting these vernal pools and assessing their vulnerability to climate change will provide NPS resource managers, Great Lakes Inventory & Monitoring Network (GLKN) and United States Geological Survey (USGS) scientists with valuable baseline data regarding the locations, distribution, and patterns of vernal pools within a landscape setting.

At Indiana Dunes National Lakeshore (INDU), major efforts are underway to restore the Cowles Bog Wetland Complex, a unit of the park that is rich in biological diversity and has been designated a national natural landmark. Remote sensing data have revealed high densities of vernal pools occuring at the upland dunes area of the Cowles Bog unit. Using data from these INDU vernal pools, a framework will be developed to assess the vulnerability of Great Lakes vernal pools to climate change. This will facilitate development of adaptive management strategies, aid resource managers in restoration

planning and fire management, and allow climate change monitoring activities to move forward at Great Lakes parks.

INTERNSHIP PROJECT DESCRIPTION

This project will integrate data from remote sensing (PALSAR, LiDAR), GIS, microclimate, habitat, and hydrogeomorphology (HGM) data on vernal pools to assess their vulnerability to climate change. The intern will identify and map potential vernal pools in selected units of six Great Lakes parks: INDU, Sleeping Bear Dunes National Lakeshore (SLBE), Isle Royale National Park (ISRO), Apostle Islands National Lakeshore (APIS), Voyagers National Park (VOYA), and Pictured Rocks National Lakeshore (PIRO). At INDU, the intern will research methods, identify data gaps, and collect ancillary data needed to conduct the climate change vulnerability assessment of vernal pools in the upland dunes area of Cowles Bog. The resulting assessment framework developed by the intern will be used to determine vulnerabilities of vernal pools to climate change at other Great Lakes parks.

Specific internship tasks and products are:

1. Conduct literature review and communicate with climate change researchers to identify data gaps and investigate methods to develop a vulnerability assessment model and framework.
2. Communicate and collaborate with staff from the Great Lakes Research and Education Center (GLREC), USGS, GLKN, university researchers, and resource managers of the six parks to obtain remote sensing, GIS, microclimate, and related data.
3. Conduct analyses of remote sensing (LiDAR and PALSAR) and GIS data to map potential vernal pools at selected units within the six parks.
4. Collaborate with resource management staff and citizen scientist volunteers at INDU to conduct field measurements of physical characteristics of a representative sample of vernal pools.
5. Integrate data from remote sensing, GIS, microclimate, habitat, HGM and other sources to characterize selected vernal pools at INDU and identify connections between pools. Intern will provide an inventory of these pools with accompanying data in the form of GIS layers, maps, graphs, figures, or other products to resource managers as baseline information for future monitoring.
6. Develop a vulnerablilty assessment tool that can be used to rank vernal pools at other Great Lakes parks. Analyze the available data to assess the vulnerability to climate change of selected vernal pools at INDU based on predicted changes in precipitation and temperature regimes from available climate models. Intern will provide a list of selected vernal pools, with their vulnerability assessment ranking.
7. Report/present to park management a summary of the intern's findings, and any recommendations for management decisions.
8. Communicate to public and stakeholders, a summary of findings through NPS and non-NPS publications, presentations, and websites, as well as social media.

QUALIFICATIONS

Applicant must be a graduate student, in the natural sciences or a closely related discipline, with advanced GIS capabilities. Ideal candidates will have a strong background or interest in climate change assessment, landscape conservation issues, hydrology or hydrogeology, ecology, or biological diversity. The intern must have a strong knowledge of ArcGIS software and related applications, including standard statistics packages. Desired qualifications include the ability to communicate effectively, in both oral and written form, the findings of the project and implications to NPS management and the

general public. Experience in field survey methods is a plus. Applicants should be able to work well independently and as team members, both in the office and in the field, with little supervision.

LEADERSHIP DEVELOPMENT

The intern will be supervised by the GLREC Research Coordinator at the Indiana Dunes NL and collaborate with researchers at the USGS Lake Michigan Ecological Research Station. The GLREC Education Coordinator and the park's Supervisiory Biologist will also serve as mentors. The work will allow interaction between the GLREC, the Great Lakes Inventory and Monitoring Network, and researchers with Michigan Technological University. The intern will also have the opportunity to interact with researchers from several universities in the region, the Field Museum of Natural History, and members of Chicago Wilderness. The intern will cultivate scientific communication skills by presenting public talks at the Indiana Dunes NL, providing content for social media, and preparing reports concerning the project. Leadership skills will be further developed by interacting with park biotechnicians, citizen scientist volunteers, and other interns. The intern will have the opportunity to present the results of the project at a future George Wright Society Conference or other scientific meeting.

DATES OF POSITION

Approximate start date is May 22, 2017, and end date is August 4, 2017. Start and end dates may be adjusted slightly based on the availability of the intern.

COMPENSATION

This initiative supports one student at $15/hour for 12 weeks, or 480 hours.

HOUSING

Housing is available in shared INDU lodging with two months advanced notice. INDU houses are furnished and include single bedrooms, kitchen facilities, and bathrooms. There is also off site rental housing in the nearby communities of Porter and Chesterton. Grocery stores and other services, are located a few miles from the park.

Indiana Dunes National Lakeshore is located at the southern tip of Lake Michigan approximately 50-60 miles southeast of Chicago, Illinois. Small towns and resort communities on the beaches of Lake Michigan and farms interspersed with large tracts of woodlands and wetlands surround the Lakeshore. An abundance of cultural and recreational activities are available year-round. Regular train service is available to Chicago, about 1 hour away.

WORK ENVIRONMENT

The GLREC has office and laboratory space at INDU headquarters. The USGS has a separate facility approximately 5 miles East of INDU headquarters. The intern will be expected to work independently with basic supervision by the mentors. Work is performed both indoors and outdoors in all types of weather. Assignments may be performed in potentially hazardous areas including steep slopes, rocky terrain, swamps, and forests. Field work includes potential exposure to extreme weather conditions, poisonous plants, biting insects, and wild animals. The park will provide safety training in use of facilities

and equipment. The intern will be provided with tick prevention guidelines and equipment. USGS and NPS will provide DOI computer security training. The intern will have access to USGS and NPS computers after security training is obtained.

CONTACT INFORMATION

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