MOSAICS IN SCIENCE
Diversity Internship Program
2021 Project Descriptions

NPS UNIT: LAVA BEDS NATIONAL MONUMENT	PD #: 2021522
Project Title: Fire on the Mountain **Position Type:** Mosaics PLC **Primary natural resource discipline:** Physical Sciences **Project keywords:** Cave, geology, fire ecology, research, biology **Location:** Tulelake, California	
COVID-19 NOTICE	
As the COVID-19 pandemic continues to change and evolve, project timelines and structure remain flexible and it may be necessary to postpone start dates, begin work remotely, or reformulate the project's description. Should any development in the COVID-19 outbreak impair a project's timeline or results, the SIP Team will work with the park and project mentors to assess the situation and determine the best course of action at that time.	
PROJECT DESCRIPTION AND WORK PRODUCTS	

Position Description: Lava Beds National Monument (LABE) encompasses a unique geologic environment of volcanic upheaval, both above and below ground. During the summer of 2020 the Caldwell Fire burned approximately 70% of the monument. Little to no scientific research has been conducted on post-fire impacts to cave resources. Planned research to be conducted in our caves will guide future fire management protocols in cave rich areas. Specifically, these interns would be assisting with collecting in-cave water and biological samples for researchers, conducting surface volcanic feature inventories that would include photo documentation, and conduct vegetation monitoring at cave entrances to establish post-fire baseline data. They will assist with documenting changes to ice floors in ice caves throughout the monument. Documentation may include mapping of caves and establishing measurement and photo-monitoring sites within the caves. Furthermore, LABE works in conjunctions with the NPS Klamath Network Inventory & Monitoring Program (I&M) to conduct long-term monitoring of cave resources at the park. Much of the monitoring and research work the interns will conduct will be guided by established protocols that are part of our I&M monitoring work. These I&M protocols include collecting data on cave climate, entrance vegetation, invertebrates, visitation, organic input and ice deposition. After initial training, the intern will work within a team of two or more to execute long-term monitoring and post-fire monitoring activities following standard operating procedures and protocols. This will include activities such as project planning and logistics, deploying and retrieving climate data loggers and human visitation logs, setting and checking cave invertebrate bait stations, conducting transects on cave entrance vegetation and scat deposition, and monitoring of ice floors and features. The interns will also learn about data management and analysis through activities such as entering and quality checking data, use of Access databases, and summarizing and reporting annual activities and data. The interns will also assist with bat and pika monitoring; both species of interest due to the potential impact of the Caldwell Fire. Bat monitoring will include white-nose syndrome (WNS) detections, and implementation of the park's WNS response strategy. Through this diversity of cave and post-fire research and monitoring experiences, interns will learn about study design, long-term monitoring, methods for studying cave environment, flora and fauna, safe caving practices, field navigation, park operations, and resource management in general.

The post-fire research being conducted is nationally significant and will influence future fire management in cave-rich karst and pseudo-karst landscapes, and will contribute to a park-wide dataset of biologically important geological features.

This position is offered through the National Park Service's Mosaics in Science Internship Program in partnership with Environment for the Americas.

Work Products: Scientific data contributed to post-fire cave resource impacts research, and further data contributed to I&M and park datasets used to track critical resources.

NATURAL & PHYSICAL WORK ENVIRONMENT

Lava Beds National Monument is a volcanic, high desert landscape. Park elevations range from 4,000 to 5,700 feet. Summer daytime highs average 75° to 85°F; lows average 50°F. Occasional thunderstorms occur in summer. Cold weather is possible any time of year, and snow has been recorded in all months. Winter daytime highs average 40°F; lows average 20°F. Morning fog is frequent from autumn through spring. More than 50% of the intern's time will be spent caving and hiking across a rugged volcanic landscape and undeveloped wild lands and wilderness to the caves. The majority of the caves to be visited are undeveloped and require traversing passages of varying sizes (walking, bouldering, crawling, squeezing, climbing). The office is a shared environment, including shared desk and computer. We anticipate the use of tablets while in the field will reduce the amount of time needed to be sitting at a desk.

QUALIFICATIONS

We are looking for undergrad or graduate students with an interest in cave resource management, natural resource protection, climate change, and fire ecology. Must have ability to work in unusual environments, be adaptable to changing situations, and be creative and curious. Knowledge and skills must be reflected in coursework and in experiences (paid, volunteer, or recreational). Basic caving experience is desirable, but not mandatory (must be documented with caving resume and references). The terrain is lava fields and very rough. Hikes to caves are up to five miles with no developed trails. Multiple caves may be visited in one day, requiring the ability to work in an undeveloped dark environment for 4-6 hours where tight spaces will be encountered. Will need to be able to work flexible hours to account for cave distances and activities to be achieved. Typical schedule will be four 10 hour days and 3 days off. Will need to be able to work/hike for hours on lava flows, with daytime temperatures ranging from 30 °F to mid 90s °F, with little to no shade. Also desirable: - An understanding of the scientific process, familiarity with field work, and need for accuracy in data collection and processing. – Some knowledge of GIS software and workflows - MS Office skills with familiarity of Word, Excel, PowerPoint, Access. -

The applicant must be a U.S. citizen or U.S. permanent legal resident ("green-card-holder") between the ages of 18 and 30 years old, inclusive, or veterans up to age 35. Prior to starting this position, a government security background clearance will be required.

VEHICLE AND DRIVER LICENSE REQUIREMENTS

Applicant must have a valid drivers license and a good driving record.

A personal vehicle is REQUIRED for this position.

HOUSING

Park housing is available and will be provided at no cost to the participant. NOTE: Uncertainty over COVID-related issues preclude a %100 guarantee we can provide housing, but we will try. If it is available, interns will live at Lava Beds National Monument housing: a multi-bedroom house or one bedroom apartment (which may be shared by two people). It is less than a five minute walk to the office. There are no on-site amenities. Tulelake, CA is a rural, gateway community for Lava Beds National Monument. It is located approximately 28 miles (a 40 minute drive) from the Monument's Visitor Center. Tulelake's population is close to 1,000. Businesses are predominately of the Mom & Pop variety. Merrill, OR is another rural, gateway community with a population of approximately 9,100 people. It is 26 miles (36 minutes) from the LABE Visitor Center. Klamath Falls is the largest town near Lava Beds. K Falls is approximately a 48 miles (60 minute) drive. It has the typical chain stores and restaurants, as well as many unique eateries and stores.

INTERNSHIP START/END DATES
Start Date: 5/17/2021 **End Date**: 7/30/2021 Eleven weeks of the internship will be in the park. A mandatory Career and Leadership Workshop will be held in Washington, D.C. from August 1 – 5, 2020.
PLEASE DIRECT ANY QUESTIONS TO ENVIRONMENT FOR THE AMERICAS
Email: mosaics@environmentamericas.org