



MOSAICS IN SCIENCE

Diversity Internship Program

2021 Project Descriptions

NPS UNIT: MOUNT RAINIER NATIONAL PARK	PD #: 2021523
<p>Project Title: Rare Carnivore Conservation in Washington’s South Cascades Position Type: Mosaics PLC Primary natural resource discipline: Biological Sciences Project keywords: Carnivores, Mammals, Conservation, Wildlife, eDNA, Wilderness, Wolverine Location: Ashford, Washington</p>	
COVID-19 NOTICE	
<p>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.</p>	
PROJECT DESCRIPTION AND WORK PRODUCTS	

Position Description: During the last century, the American West lost many of its predators, the impacts of which have cascaded through the ecosystem. The causes of these declines are myriad and include direct human-caused mortality, as well as habitat loss and the creation of substantial barriers to population connectivity. Significant, historical threats such as overharvest and predator control programs have been eliminated; and some carnivore populations are slowly recovering. However, swaths of landscape remain and continue to be fragmented, and climate change poses a novel challenge. Among the carnivore species most at risk are the mid-sized carnivores (i.e. mesocarnivores) including: fisher (*Pekania pennanti*), wolverine (*Gulo gulo*), and Cascade red fox (*Vulpes vulpes cascadenis*). Fishers were extirpated from Washington State by the mid-1900s and are actively being restored through reintroductions. Wolverines were also extirpated from the state in the mid-1900s and there is some recent evidence of recolonization by at least three individuals in the south Cascades, though their status and ability to persist are unknown. Historically, Cascade red fox occurred throughout the Washington and British Columbian Cascade Mountains but their range has contracted to a small portion of the south Cascades, with Mount Rainier National Park providing essential core habitat and habitat connectivity. Mount Rainier National Park has been actively engaged in mesocarnivore monitoring and recovery with the five primary goals. The intern will work as a member of a team, in collaboration with the Cascades Carnivore Project to conduct scat surveys on trails, which will allow MORA to continue to identify species and individuals, and to accomplish the following goals: 1) detect occurrence of fisher, wolverine and Cascade red fox in the park using photos and DNA from scats, hair, and urine samples, 2) estimate the number of Cascade red fox in the park using genetic mark-recapture analysis of genotyped DNA, 3) identify health risks by characterizing parasites in scats, 4) identify key food resources by DNA metabarcoding of scat samples, 5) estimate Cascade red fox home range size and seasonal distribution to identify areas to focus education and outreach efforts and reduce fox habituation, food conditioning and human/wildlife conflicts. Field work requires hiking up to 10 miles per day for multiple consecutive days in a remote, mountainous setting carrying pack that weighs up to 40 pounds. The survey protocol can be viewed here: <https://www.cascadescarnivore.org/volunteer>

Collectively, these results will inform park management of summer and winter recreation, efforts to reduce habituation, food conditioning and human/wildlife conflicts, and identify future species monitoring priorities (e.g. White-tailed Ptarmigan, pika, marmot, pocket gopher and other important prey species). There is evidence that the type of low-impact winter recreation common at Mount Rainer, such as skiing and snowshoeing, can negatively impact wolverines especially during the spring denning season. This study will allow the park to identify ski and snowshoe areas that may require more active management, such as limiting access, to reduce human impacts during denning and human-wildlife conflicts. Foxes, and potentially fisher, may be prone to habituation and food conditioning in areas with high levels of human use, especially in winter when other food resources may be scarce. Park managers may place restrictions on access to areas frequented by female wolverines during this sensitive time of year, and target outreach and education programs to areas where foxes and fisher are frequently observed.

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

Work Products: The intern will be responsible for coordinating volunteers participating in community-based science, sample collection, data entry and sample/data delivery to university researchers at Cascades Carnivore Project, conducting a literature review, and writing an end of season report. Project goals and updates will be reported weekly via social media and blog posts. The intern will prepare a presentation for the park management team, and have the opportunity to contribute to a manuscript for publication in scientific journal article.

NATURAL & PHYSICAL WORK ENVIRONMENT

Natural Environment: Mount Rainier National Park is about two hours from Seattle, WA; Portland, OR and Yakima, WA by car. The park is approximately 236,000 acres, with six major areas of development and attractions. These are: Nisqually Entrance, Longmire, Paradise, Ohanapecosh, Sunrise/White River, and Carbon River. These areas are some distance apart, and commercial transportation is not available. Large grocery stores, malls and movie theaters are at least a 45 minute to one hour drive from almost every area of the park. Although bicycles are not permitted on the trails in the park, they are permitted on the roads, and with nearly 150 miles of road in the park, there are cycling opportunities. However, be aware that park roads are narrow with no bike lanes. The park has 240 miles of hiking trails to explore on your days off. Weather in Washington State and around the park is unpredictable. A chance of rain from May through the middle to end of July is not uncommon. Generally, the temperature is cold when it rains, and strong and gusty winds can occur. We suggest you bring warm clothing (wool and synthetics) and rain gear. Our spring and summer weather does not mean we do not experience occasional summer heat during the day. A list of essential items to bring will be provided before the season starts. Physical Work Environment: 75% field work, 25% office. Field work requires hiking up to 10 miles per day for multiple consecutive days in a remote, mountainous setting carrying pack that weighs up to 40 pounds.

QUALIFICATIONS

The intern will work 40-hours per week both independently and as part of a team. Candidates must be able to hike over uneven terrain carrying a 40 pound backpack for up to 15 miles. Successful candidates will: have a keen interest in wildlife and wilderness, be highly motivated and well organized, have excellent verbal and written communication skills, be an enthusiastic learner, be engaging with the public, have experience backpacking and camping, and have a strong commitment to safety. Experience/coursework in ecology, field methods, mammalogy, ornithology, biology, molecular biology, environmental policy, and GIS are highly desired.

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 RECOMMENDED but not required for this position.

HOUSING

Park housing is available and will be provided at no cost to the participant. Shared park housing is available (house or apartment). In 2020, housing units were assigned so each occupant had their own bedroom and bathroom with shared common spaces (kitchen/living room). Shared housing units are typically assigned by gender. Housing is furnished with furniture and major kitchen appliances but personal items such as linens, dishes, etc. may not be provided. Housing may be a 25 minute drive from the main office location. Some front country and back country camping will be required. All camping gear will be provided. Pets are not allowed.

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

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