



SCIENTISTS IN PARKS

PROJECT DESCRIPTION SUMMER 2021

NPS UNIT: DENALI NATIONAL PARK AND PRESERVE	PD #: 2021086
<p>Project Title: Technical Computing and Soundscape Intern (1) Primary natural resource discipline: Physical Sciences Project keywords: acoustic monitoring, programming, coding, backcountry, Python Location: Denali Park, Alaska</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	
<p>Position Description: This internship provides the opportunity to develop both technical computing and backcountry skillsets under the mentorship of the Alaska Region Soundscape Specialist for the National Park Service. The selected applicant will assist the Soundscape Specialist with deployment of audio recording equipment and the development and improvement of computer-based data analysis and querying tools. Many of the audio recording sites are located deep in remote areas of the park accessible only by foot. Overland travel on foot requires considerable physical and mental tenacity. The intern will work closely with the Soundscape Specialist and Denali Backcountry Rangers to organize travel to and from recording sites. The intern will also work with Denali’s Data Manager to maintain several data collection/management systems that provide critical information to park staff and managers. The balance of computing and field work will largely depend on the selected applicant’s skills and interests, although some computing tasks are required.</p> <p>The ideal applicant will have a solid foundation in computer programming, experience and a strong interest in wilderness travel, and a desire to contribute valuable information to the conservation and management of wilderness resources. Computing tasks include:</p> <ul style="list-style-type: none"> • updating an existing Python library • troubleshooting data collection systems that integrate software written in multiple programming languages (e.g., Python, Javascript, HTML, PHP, VBScript) and maintained with multiple database management systems (e.g., PostgreSQL, SQLite, Microsoft Access, ArcGIS Online) • writing new code to analyze and visualize data. <p>Well-developed knowledge in Python and HTML/Javascript is preferable, although applicants with a demonstrated ability to quickly learn new programming languages will also be highly competitive.</p> <p>At the start of the season the applicant can expect office time testing equipment for field deployment. Both preparation and maintenance of field equipment requires diagnostic thinking skill. A basic understanding of electronic circuits or signal flow is helpful, but not required. Minority tasks are varied and tailored in part to</p>	

the applicant's skillset. They include equipment repair/inventory, routine data analysis, field support for minor acoustics projects/initiatives, testing new technology, outreach activities, or GIS tasks.

This internship offers an interdisciplinary opportunity to address resource monitoring issues that span several related disciplines including acoustics, computer and data science, numerical ecology, visitor experience and impact management, and wilderness management. More specifically, the data analysis and management systems that the applicant will create and contribute to will aid Denali's efforts to understand the relationship between aviation and soundscape impacts, manage vehicle traffic on the only road in the park that receives ~300,000 visitors/year, analyze trends in park visitation, and conduct critical analyses to progress the science of acoustic monitoring. Analysis of acoustic monitoring data will provide the intern with insight into the nature of long-term scientific studies. The selected applicant's efforts will result in actionable data and computational tools with broad influence on aviation, wilderness, and visitor and resource management policies.

This position is offered through the National Park Service's Scientists in Parks (SIP) Program in partnership with Stewards Individual Placement Program (Stewards) and The Geological Society of America (GSA).

Work Products: Primary computing projects include improvements to several code repositories (<https://github.com/gjoseph92/soundDB>, <https://github.com/nationalparkservice/ffaudIO>, https://github.com/nationalparkservice/acoustic_discovery, <https://github.com/smHooper/flightsdb>, and <https://github.com/smHooper/savagedb>). Fieldwork will result in 1+ month of sound recordings at approximately 7 field sites.

QUALIFICATIONS

Qualifications

Applicant should be either a current upper level undergraduate or graduate student or recent graduate with a major in computer science, natural or physical sciences, engineering, or social science field. Interests in geography, acoustics/physics, statistics, electrical/mechanical engineering, ecology, or ornithology would be especially relevant to the position. We are very flexible and open-minded about our inclusion, and are often looking to fold new ideas and perspectives into our innovative program.

Required skills/experience

- Strong programming skills in Python and web development languages (e.g.. HTML, Javascript, PHP/Node.js, CSS) OR well-developed skills in other programming languages with a demonstrated ability to quickly learn a new language
- Demonstrated ability to independently troubleshoot computing problems
- Experience documenting computer code
- Ability to prioritize tasks and respond to sporadic requests from coworkers
- Ability to work amicably as part of a small team in both the office and in inclement field conditions
- Basic map reading and GPS orientation skills
- Experience hiking cross-country in a rugged environment
- Ability to carry a ~45-55 pound backpack

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 not required for this position.

If the SIP is required to drive a park vehicle for their position, Stewards will perform a driving records search, and the SIP's ability to drive a park vehicle during work hours will be contingent upon the results. SIPs will have to have had their license for 3 years or be over the age of 21 to be insured as drivers under Stewards insurance policy. Examples of things that will preclude a SIP from driving a park vehicle include: SIP under the age of 21 years old that has been licensed less than three years, DUIs, multiple moving vehicle violations, suspended or revoked license, or three or more accidents (regardless of fault) in the last 3 years. If the driver's search is favorable, Stewards will provide driver's liability insurance while the intern is driving a NPS vehicle for their SIP position. If the SIP is denied coverage by Stewards, they will not be permitted to drive during work hours.

HOUSING

Park housing is available and will be provided at no cost to the participant. Housing will either be at C-Camp (dense seasonal cabins with 2x occupants, nearby bathhouse for showers, kitchen - applicant provides their own food) or at Campus Housing (dense seasonal housing w/out roommate, nearby bathhouse for showers, no kitchen - instead a meal plan at employee dining room). Shuttle buses run from housing areas to office. Further information on housing will be provided during interview process. Note that housing details (e.g., occupants per cabin) could change depending on the course of the COVID-19 pandemic.

NATURAL AND PHYSICAL WORK ENVIRONMENT

Local Area

Denali is a six-million-acre park with the Alaska Range as a backbone. The park is replete with extensive glaciers and braided rivers, miles of tundra plateaus, and countless glacial lakes and ponds, all capped by the magnificent 6,194 m (20,320 ft.) Denali. The summers are often cool ($55^{\circ} \pm 10^{\circ}$ F) and wet. During drier summers wildfire smoke can be prevalent. The Alaska Range is an exceptionally wild and challenging place to work and recreate. A grocery store is 15 miles north of the park entrance, although larger city services are available in Fairbanks, 120 miles north of the park entrance. Daily commuting options to and from the office include bikes (available for loan), walking along a roadside trail, and a free shuttle system. Many seasonal employees do not have their own vehicles and find the existing transportation to be adequate for their needs. The office is in Denali Park, Alaska, 250 miles north of Anchorage, 120 miles south of Fairbanks.

Work Setting


Office tasks will largely take place in a common working space shared with many other seasonal employees. Although there is significant opportunity for time in the field, successful fieldwork requires a thoughtful plan organized with colleagues in the office environment. Field work will be performed in a wilderness environment, spending long hours in the outdoors. Field collection efforts will involve overnight trips to monitoring sites and long hours outdoors in a variety of different weather conditions (rain/snow, cold, strong winds/blowing silt, low visibility) and over a variety of terrain (steep or coarse rocks, swift moving rivers, soft tundra/wetland, snowfields). The applicant is expected to work in any of these conditions, while actively mitigating hazards with their team to accept only reasonable risks. For this reason we seek applicants with strong decision-making skills in the backcountry. Exposure to wildlife is common, and precautions are emphasized. A bear safety orientation course is required and will be provided at the park. Weather is unpredictable, but summer usually has some days of dry, relatively clear conditions with intermittent and sometimes lengthy periods of wet drizzle. Good personal rain gear is a must, with under layers (like fleece) for colder and windier conditions. Don't forget the bug repellent; interior Alaska's mosquito reputation is legendary. Past participants have developed a healthy respect and love for the physical and mental challenge of working in the Denali, but occasionally the learning curve has been steep. We seek applicants who are already competent backcountry travelers heading into this employment.

INTERNSHIP DATES

Start Date: 5/3/2021

Number of Weeks: 20 Weeks

Flexible Start Date: Yes

LIVING ALLOWANCE	
20 Weeks (\$400/week =\$8000)	
RELOCATION ALLOWANCE	
\$1000	
AMERICORPS PROGRAM	
 <p>AmeriCorps is a program that engages individuals in intensive community service work with the goal of “helping others and meeting critical needs in the community”. The SIP Program is supported through AmeriCorps by providing a Segal Education Award in addition to the SIP’s living stipend and relocation allowance.</p> <p>Upon successful completion of the SIP position, the SIPs (AmeriCorps members) are eligible for a \$1,638 - \$6,195 pre-tax education award that can be used for paying back student loans or for continuing their education. The amount of the education award is based on the length of the position.</p> <p>AmeriCorps limits the number of terms an individual can serve to 4 terms. If an applicant has previously completed 4 SIP or other AmeriCorps positions, they will not be eligible to apply for an additional SIP position.</p>	
SUPERVISORS/MENTORS	
<p>Primary: Davyd Betchkal davyd_betchkal@nps.gov (970)-305-0191</p>	<p>Secondary: Sam Hooper samuel_hooper@nps.gov (907)-683-9512</p>