GEOSCIENTISTS-IN-THE-PARKS
2018 – PROJECT DESCRIPTION

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<tr>
<th>NPS UNIT: NATURAL SOUNDS AND NIGHT SKIES DIVISION</th>
<th>PD #: 2018067 &amp; 2018068</th>
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<tr>
<td><strong>Position Title:</strong> Science and Engineering Intern (2 positions)</td>
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<td><strong>Position Type:</strong> Guest Scientist</td>
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<td><strong>Primary natural resource discipline:</strong> Natural sounds and night skies</td>
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<td><strong>Location:</strong> Fort Collins, Colorado</td>
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**PROJECT DESCRIPTION AND WORK PRODUCTS**

**Position Description:** These GIP intern will spend 80% of their time working in the Fort Collins office and laboratory developing equipment and data processing scripts, and 20% of their time collecting data outdoors, potentially in remote field settings. The main goals of this position will be to educate intern about data collection and data processing needs for natural sound and night sky resource monitoring, and to advance development of tools that meet NPS resource management objectives. The main duties include:

- Assist an NPS Physical Scientist with the development and testing of data collection equipment and data processing tools pertaining to natural sounds and night skies.
- Utilize existing or newly-developed instruments to collect data in outdoor settings, possibly at night.
- Potentially participate in cooperative research projects sponsored by the Natural Sounds and Night Skies Division.

In order to perform these duties the selectee will potentially participate in:

- Circuit board population and soldering,
- Testing of electronic module performance,
- Attach electronic modules to a housing, wire modules together,
- Conduct calibrations and lab tests of instrument performance,
- Field tests of instrument performance in nearby parks and natural areas,
- Collection of data quantifying ecological conditions or animal behavior in the field,
- Development of data processing scripts,
- Analyses and reporting of monitoring data,
- Writing data collection guidance and protocols.

Field work may involve hiking into remote locations and conducting data collection at night.

The intern will work closely with a Natural Sounds and Night Skies Resource Physical Scientist in the Fort Collins office, with additional support and guidance from other members of the science and technology branch of the division.
This position is offered through the National Park Service’s Geoscientists-in-the-Parks (GIP) Internship Program in partnership with Stewards Individual Placement Program (Stewards) and The Geological Society of America (GSA). Upon successful completion of the GIP internship, the participant is eligible for an AmeriCorps Education Award.

**Work Products:**
1. New instruments that enhance NPS monitoring capabilities for natural sounds and night skies. The selectee will select projects in consultation with the Physical Scientist from a list of available opportunities. Examples of such opportunities are:
   a) Configuring audio recorders for long-term, unattended recordings,
   b) Development and testing of extremely sensitive microphones,
   c) Configuring a rangefinding system for tracking vehicle movements,
   d) Developing systems to monitoring nocturnal flying insects,
   e) Automatic detection of sound or light events in long-term recordings
2. Computer programs that automatically detect sound or light events or extract summary statistics from long-term recordings.
3. Reports of data collection projects using existing or newly-developed instruments or procedures.
4. Written guidance or protocols for data collection.

**QUALIFICATIONS**
The GIP intern should have experience with electronics or computer programming, and be willing to learn new skills to execute their projects. He/she must be able to work independently on portions of their projects, using problem solving skills to attempt to diagnose and resolve issues before referring them to supervisory staff. Prior experience with outdoor observations and data collection is not required, though the intern must be willing to participate in field projects. Field projects may in remote locations and travel may include some nights lodging or camping near the field site. Interns should be willing to help the team carry equipment to field sites.

GIP participants are considered AmeriCorps members: AmeriCorps limits the number of terms an individual can serve to 4 terms. If an applicant has previously completed 4 GIP or other AmeriCorps positions, he/she will not be eligible to apply for an additional GIP position.

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

**VEHICLE/DRIVER’S LICENSE REQUIREMENTS**
Applicant must have a valid driver’s license and a good driving record. The incumbent may be required to drive a government vehicle for equipment testing and field work. A personal vehicle is not required, but may expand the range of convenient housing options for the intern.

If the GIP is required to drive a park vehicle for their position, a driving records search will be performed and the GIP’s ability to drive a park vehicle will be contingent upon the results. Examples that will preclude a GIP from driving a park vehicle include DUl’s, multiple moving vehicle violations, suspended or revoked license, or three or more accidents (regardless of fault) in the last 3 years.

**HOUSING**
Park housing is NOT available. The participant will be responsible for finding housing in the Fort Collins, Colorado area. Numerous apartments / houses are available in the vicinity of the NPS office.

**INTERNSHIP START/END DATES**
Start Date: 6/4/2018
End Date: 8/24/2018
Number of weeks: 12
Flexibility of dates: Yes
STIPEND PAYMENT
$4,200 for 12 weeks

HOUSING PAYMENT
$2,100 for 12 weeks

TRAVEL ALLOWANCE
$250

PHYSICAL/NATURAL & WORK ENVIRONMENT

Physical/Natural Environment: Fort Collins is an hour north of the Denver International Airport, at an elevation of approximately 5,000 feet. It is home to Colorado State University, with whom NPS has many active research partnerships. The city boasts 600 acres of parks, 40,000 acres of natural areas, and 20 miles of off-street biking trails. Fort Collins is an hour downslope of Rocky Mountain National Park.

Work Environment: In the office and laboratory, the workplace is well-lit and well-ventilated. Equipment for electronic and mechanical fabrication will be provided, along with instructions for their safe use. In the field, work may be conducted in rocky areas requiring hiking over uneven terrain. Weather hazards include strong winds, dust storms, monsoons, and flash floods. Wildlife hazards include large mammals, venomous snakes, and biting insects.

MENTORING AND LEARNING GOALS

Mentoring: Initially the intern will be introduced to the activities of the science and engineering branch and meet team. They will then review the project opportunities with a Physical Scientist, select the projects they will work on, and develop a three-month work schedule. The intern will present their proposed work schedule to the entire division and get feedback on how their work will connect to other parts of the Natural Resource Stewardship and Science Directorate, NPS parks and regions.

Lab and office work will take place adjacent to the Physical Scientist’s office, offering regular opportunities for consultation and problem solving. There will be weekly meetings with the Physical Scientists and other science and technology staff to review results and progress towards project completion. Field tests and other outdoor data collection experience will be coordinated by the Physical Scientist, and in most cases the intern will be accompanied on these activities by one or more NPS staff.

One week before the end of the internship the intern will present their results and findings to the entire division, soliciting feedback that can be incorporated into any final reports and products.

Learning Goals:
1. The Intern will learn about night sky and natural sound resources, methods for measuring resource conditions, and the relevance of photic and acoustic resources to visitor experience, wildlife, and other part resources and values.
2. The GIP will gain experience in developing or using scientific instrumentation suitable for long-term deployment in national park settings.
3. The intern will gain experience in data processing and statistical analyses relevant to national park resource management.
4. The intern will gain experience with designing and conducting tests of equipment in outdoor environments.
5. The intern will gain experience performing as a part of a science and engineering team, including project coordination and communication of results.

SUPERVISORS

Primary Supervisor: Damon Joyce
Title: Physical Scientist

Secondary Supervisor: Kurt Fristrup
Title: Natural Sounds and Night Skies Branch Chief, Science and Technology
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| **Park or Program Website:** | [https://www.nps.gov/orgs/1050/index.htm](https://www.nps.gov/orgs/1050/index.htm) | **Park or Program Website:** | [https://www.nps.gov/orgs/1050/index.htm](https://www.nps.gov/orgs/1050/index.htm) |