



# GEOSCIENTISTS-IN-THE-PARKS Internship Program

## PROJECT DESCRIPTION 2020 FALL/WINTER

<b>NPS UNIT: JEWEL CAVE NATIONAL MONUMENT</b>	<b>PD #: 2020445</b>
<p><b>Position Title:</b> Cave and Karst Assistant (1)  <b>Position Type:</b> Guest Scientist  <b>Primary natural resource discipline:</b> Geologic resources  <b>Project keywords:</b> cave, karst, GIS, field mapping, hydrology  <b>Location:</b> Custer, South Dakota</p>	
<b>COVID-19 NOTICE</b>	
<p>This project description was developed prior to the onset of the COVID-19 outbreak. Therefore, 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 GIP Team will work with the park and project mentors to assess the situation and determine the best course of action at that time.</p>	
<b>PROJECT DESCRIPTION AND WORK PRODUCTS</b>	
<p><b>Position Description:</b> The intern will work primarily with the Resource Management division, with a focus in two areas: geological research (surface and subsurface) and cave management activities.</p> <p>Work assignments include:</p> <p>Geology - The intern will assist with a project to correlate surface and subsurface geology. This includes field mapping on the surface, caving trips to inventory and map subsurface geologic features, documenting field observations in Adobe Illustrator and ArcGIS, adding vertical displacement data to GIS maps, creating geological cross sections that include cave and aquifer relationships, and coauthoring a paper for presentation at a GSA or similar conference.</p> <p>Cave Management - The intern will assist the Resource Management Staff with photomonitoring established photopoints along off-trail travel routes to document human impacts that have occurred over time; the intern will take in-cave photos, organize and compare them with previous photos, and write reports to summarize changes. He or she will also help mitigate human impacts along established tour routes, do routine microclimate monitoring, assist with data collection for an ongoing hydrology project, and assist in creating cave rescue pre-plans along the major in-cave travel routes.</p> <p>Jewel Cave's enabling legislation established the park for scientific interests and public enjoyment. The NPS emphasizes science-based management decisions, preserving the resource unimpaired for future generations, and ensuring the safety of staff and visitors. These values are realized, in part, by the following park priorities.</p> <p>The park's General Management Plan and Foundation Document both identify the correlation of surface and subsurface geology as a high priority need to help predict and protect cave passages that have not yet been discovered. (Volumetric airflow studies use the cave's barometric wind to predict that the 200 miles of known represent only 3% of the total volume.) The cave management activities help ensure protection from human impacts, and the cave rescue pre-planning is proactive program to minimize the consequences</p>	

of off-trail injuries. The intern's work directly contributes to meeting the park's primary needs for resource management and human safety.

Upon successful completion of the GIP internship, the participant is eligible for an AmeriCorps Education Award.

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).

**Work Products:** The final products include: 1) a digital cave map, updated with geological features and annotation, 2) a geological map in GIS, updated with vertical displacement data, 3) co-authored geological paper, 4) completed cave rescue pre-plan for at least one travel route.

### QUALIFICATIONS

The candidate should 1) be a caver in good physical condition, with at least 100 hours caving experience, 2) have at least a BS in geology or geological engineering, 3) have completed at least 5 weeks of geological field camp, 4) have substantial experience with digital graphics programs such as Adobe Illustrator, and 5) have substantial experience with ArcGIS, including the ability to create and edit georeferenced polygons and polylines

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 veteran 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 driver license and a good driving record.** The intern will be driving a park vehicle.

**A personal vehicle is REQUIRED but not required for this position.** Jewel Cave is 13 miles from the nearest town. It has housing both on-site and in town. If the intern lives on-site, he or she will have to drive to town for groceries, recreational activities, medical appointments, etc. If in town, he or she will have to drive to work and back. There may be some opportunity to carpool, but that cannot be guaranteed.

If the GIP is required to drive a park vehicle for their position, Stewards will perform a driving records search, and the GIP's ability to drive a park vehicle during work hours will be contingent upon the results. GIPs 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 GIP from driving a park vehicle include: GIP 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 GIP position. If the GIP 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.** Park housing is provided at no cost to the participant. Modern apartments, with 2-4 occupants, up to 2 occupants per bedroom/bathroom, common kitchen and living room, and laundry facilities. No cost for utilities. Free shared WiFi.

### INTERNSHIP DATES

**Start Date:** 10/5/2020

**Number of weeks:** 20 weeks

**Flexibile start date:** Yes

<b>LIVING ALLOWANCE</b>	
20 weeks (\$400/week = \$8,000)	
<b>RELOCATION ALLOWANCE</b>	
\$250	
<b>PROFESSIONAL DEVELOPMENT ALLOWANCE</b>	
\$1000	
<b>AMERICORPS PROGRAM</b>	
	<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 GIP Program is supported through AmeriCorps by providing a Segal Education Award in addition to the GIP’s living stipend and relocation allowance.</p>
<p>Upon successful completion of the GIP position, the GIPs (AmeriCorps members) are eligible for a \$1,612 - \$6,095 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 GIP or other AmeriCorps positions, they will not be eligible to apply for an additional GIP position.</p>	
<b>NATURAL AND PHYSICAL WORK ENVIRONMENT</b>	
<p><b>Natural Environment:</b> Jewel Cave is located in the southwestern Black Hills, about a mile above sea level. The climate is generally mild, but can vary greatly. Summer daytime temperatures are typically in the 80s and 90s, but may exceed 100 degrees F. Humidity is usually less than 50% RH. Average annual precipitation is 17 inches. Nearby Custer is a town of 1,800 with a grocery store, several convenience stores, restaurants, and basic amenities. It is 13 miles from the park. Rapid City is part of a small metropolitan area that has all facilities, including theaters many cultural and recreational opportunities. There is a nearby Regional Airport. Rapid City is 53 miles from the park. Black Hills National Forest, Custer State Park, and several NPS areas offer many recreational opportunities, all within 3 hours' driving time.</p>	
<p><b>Physical Work Environment:</b> The work will be approximately 50% indoors and 50% outdoors. The landscape is moderately rugged, and sometimes experiences unexpected thunderstorms. Summer daytime temperatures are typically in the 80s and 90s, but may exceed 100 degrees F. The cave environment is 49 degrees F, and does not require vertical caving techniques. The intern must be in excellent physical condition for caving, and comfortable in a dry cave environment. He or she should also be comfortable caving for up to 10 hours at a time.</p>	

**MENTORING AND LEARNING GOALS**

**Mentoring:** The supervisor/mentor will introduce the intern to park staff and stakeholders, and ensure they have appropriate training. The supervisor/mentor will establish broad goals and general procedures, allowing the intern considerable latitude in executing the details. Oversight will be accomplished through a daily ongoing dialog about progress, needs, and direction, and will provide the broader context of working within the NPS.

The supervisor/mentor will also accompany the intern for 30-50% of the surface field work, and 100% of the in-cave field work. He will collaborate on a near-daily basis for the digital mapping and GIS work, and for co-authoring the geological paper. Much of the cave management work will be done with park resource management staff and volunteers.

The intern will also work with USGS personnel conducting a hydrology study at Jewel Cave, SD State geologists doing field mapping in the Southern Black Hills, and a German researcher conducting microclimate studies at Jewel Cave and nearby Wind Cave.

**Learning Goals:** The intern will learn new skills in photomonitoring, working with digital cave maps, adding vertical displacement information to geological maps in GIS, and mapping subtle geologic structures on the surface and within the cave. The intern will also gain an understanding of how these disciplines interact to accomplish resource management goals within the National Park Service.

**SUPERVISORS/MENTORS**

**Primary:**

Mike Wiles  
Chief of Resource Management  
11149 US Highway 16  
Custer, SD 57730  
(605) 673-8308 | Mike\_Wiles@nps.gov  
[www.nps.gov/jeca](http://www.nps.gov/jeca)

**Secondary:**

Dan Austin  
Resource Management Assistant  
11149 US Highway 16  
Custer, SD 57730  
(605) 673-8314 | Daniel\_Austin@nps.gov  
[www.nps.gov/jeca](http://www.nps.gov/jeca)