GEOSCIENTISTS-IN-THE-PARKS
Internship Program

PROJECT DESCRIPTION
2020 SPRING/SUMMER

NPS UNIT: DENALI NATIONAL PARK AND PRESERVE	PD #: 2020111

Position Title: GIS Assistant (1)
Position Type: Guest Scientist
Primary natural resource discipline: Multidisciplinary
Project keywords: GIS, cartography, geospatial
Location: Denali Park, Alaska

PROJECT DESCRIPTION AND WORK PRODUCTS

Position Description: Land use in and around Denali National Park and Preserve has changed since the inception of the park 100 years ago - from Gold Rush-era mining to proposed visitor services' facilities, the ebb and flow of development and restoration is obvious at multiple temporal and spatial scales across the landscape of the park and surround areas. As the park moves into the next 100 years, many park management decisions will be related to land use. Documenting the historic, current, and proposed land uses from existing geospatial data, historic aerial and oblique photos, oral histories, satellite imagery, and proposed project documents into a concise geospatial dataset, along with producing map products and written reports, will allow managers both a visual and quantitative assessment of land use trends.

Participants will assist with documenting changes of land use in and around Denali National Park and Preserve by:

- Organizing and/or collecting existing data (e.g., aerial photos, satellite imagery) for scanning, georeferencing, and digitizing
- Assisting in creating primary (e.g., flight lines and orthomosaics) and secondary mapping products (e.g., 3D models from stereo-pair compilations, kernel density maps) to assess the change over time
- Providing metadata and writing standard operating guidelines for data creation and access

Additionally, participants may have the opportunity to assist in field surveys to establish ground control for structure-from-motion photogrammetric products produced by both historic and future fixed wing and small unmanned aerial systems flights. Shorter cartographic projects requiring immediate attention may arise throughout the season, such as support for pressing management issues or incident response. The participant may also have the opportunity, in conjunction with the Alaska Geographic/Murie Science and Learning Center, to work with and lead small groups of youth (middle and high school students) through the concepts of GIS or cartography during field days and holiday events.

Answering historic and current land-use questions often drive management decisions related to park policy, regulations, and guidelines. GIP participants will assist in providing the best data available to managers for making these decisions.

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:

Geospatial

- Design and create a geodatabase and/or theme layers specific to Denali to track raster data;
- Process aerial photos or satellite imagery for inclusion in the geodatabase;
- Digitize land use patterns to create vector feature classes and raster datasets for future analysis (e.g., pre-ANILCA park road footprint);
- Document metadata for all geospatial data in FGDC-compliant format for submission to the NPS Alaska Region permanent dataset.

Map products

- Create maps to identify areas of existing historic data, missing/incomplete historic data, and future or proposed development both within and near the park boundary;
- Create animated map with time enabled data for export to video format to present to the park management team.

Reports

- Detailed standard operating guidelines on accessing compiled data for submission to the park GIS Specialist;
- Summary of existing geospatial data products and identification of needs for historic and future data for presentation to park management team.

QUALIFICATIONS

Applicants must have at least three years towards a bachelors degree in cartography or a geospatial degree (including geomatics, GIS, geography, etc.). Applicants must have taken coursework in georeferencing, editing, database design and management, and programming languages. Additional coursework in Microsoft Access, Trimble Business Center, AutoCAD, or Agisoft Photoscan software will make the applicant more competitive. Advanced GIS skills are required whether they are gained through coursework or applied experience. Advanced GIS skills include spatial data management, understanding of datums and projections, and the ability to recommend spatial analysis techniques. The applicant should be able to work well independently both in the office and in the field with little supervision, have advanced map reading and GPS orientation skills, must be able to interpret airphotos/satellite imagery, Opportunities for outdoor work may be available, but are not guaranteed, and if outdoor work is desired, applicants must be comfortable hiking off trail in a rugged mountain environment.

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 LICENSE REQUIREMENTS

Applicant must have a valid driver license and a good driving record. The intern must be able to utilize NPS Motorpool vehicles for travel within the park.

A personal vehicle is RECOMMENDED but not required for this position. A personal vehicle is not required to travel inside the park, as there is a bus system available within Denali Park but it can be convenient if the applicant wishes to see other parts of Alaska. The nearest amenities (groceries) are 20 minutes outside of the park, while the nearest large town is over two hours away from the park.

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 and there are two options available. Which option the applicant ends up in will be based on availability. Pets and long-term guests/partners are not allowed in either housing option.

Option 1: The NPS seasonal housing area called C-Camp contains 20' x 20' cabins a short walk (5 min or less) from the headquarters area offices. Cabins have 2 occupants, but each person has a small private room with the kitchen and living space shared. Showers, bathrooms, and laundry (as well as an alternative location to wash dishes) are located in the showerhouse in the center of C-Camp and are shared with the 50+ other residents. C-Camp residents are responsible for purchasing all of their own food and providing bedding and cleaning supplies.

Option 2: Campus Housing is located about 2 miles from park headquarters. The biggest difference is there is no kitchen and meals are usually purchased at an employee dining hall. Most residents in this housing area work for the park concessionaire that provides buses and other services within the park, but a few NPS staff and interns are housed here each year. Housing consists of small condominium-type units in which participants have a private room with 2 bunk beds. Bedding is provided and the showers/restrooms are communal. From May to mid-September, the dining hall provides breakfast, lunch, and dinner, as well as bagged meals when you are away for the day. Commuting options to the office include bikes (available for loan), walking along a roadside trail, and a free shuttle system from May – mid-September.

Some fieldwork will involve remote site camping in wall tents. Portions of the work may involve backpacking for one or more nights. Backcountry camping gear (backpack, tent, sleeping bag, stove cooking pots, etc.) can be supplied by the park but the participant may consider bringing their own.

INTERNSHIP DATES

Start Date: 5/11/2020
Number of weeks: 20 weeks
Flexibility of dates: Yes

LIVING ALLOWANCE

20 weeks ($400/week = $8,000)

RELOCATION ALLOWANCE

$1000

AMERICORPS PROGRAM

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.

Upon successful completion of the GIP position, the GIPs (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.

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.

NATURAL & PHYSICAL WORK ENVIRONMENT

Natural Environment: 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') Denali. The geologic core of the park consists primarily of Paleozoic and Mesozoic marine sedimentary rocks, with some Cretaceous and Tertiary plutonic intrusions and volcanic episodes. Rock formations in the park have been modified by near-continuous tectonic compression and extensive glaciation. The sub-arctic climate has created extensive permafrost and its associated features.

Physical Work Environment: Office work will take place in a communal work space, inside the Resources building located at Headquarters. Employees there will have access to a dedicated computer and small desk space. The building is heated but has minimal circulation. The building also has bathrooms and a small sink area that serves as a kitchen.

Field work will be performed in a park environment where the terrain is steep, uneven, and rocky. Approaches are frequently lengthy and covered with thick vegetation. Almost all hiking will be off trail. Some tasks may require travel on snow or ice (glacier) conditions. Assignments involve backcountry camping in all varieties of weather, and tasks may include moderate to strenuous physical exertion (long periods of standing, hiking, or climbing). Exposure to wildlife (i.e. grizzly bears and moose) is common, and precautions when hiking or camping is 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, drizzling conditions. Good personal raingear is a must, with under layers (like fleece) for colder and windier conditions. Much of the geohazard work is on exposed ridges or mountain tops where conditions are often wet, windy and cold. Relatively water resistant hiking boots are good for most of the mountainous work, while some switch to rubber boots or light shoes for river bar or tundra travel. Don't forget the bug repellent and a headnet; Interior Alaska's mosquito reputation is not a trivial issue. Past participants have developed a healthy respect and love for the physical and mental challenge of working in the Denali backcountry. Participants will conduct office work in a collaborative environment at park headquarters with other seasonal employees under supervision in the Natural Resources division. Denali, Alaska – 250 miles north of Anchorage, 120 miles south of Fairbanks. Park headquarters is accessible by auto, bus or train.

MENTORING AND LEARNING GOALS

Mentoring: The GIS technician participant will be supervised directly by the Park GIS Specialist and will also collaborate extensively with other physical science, education, and interpretation staff. The GIS participant will be working with a Cartographic Technician. Orientation will be conducted one-on-one by the Park GIS Specialist as well as collectively at the All-Employee Orientation. Training will be provided by park staff at the level necessary for safe backcountry travel in bear country, Leave No Trace techniques, and informal interpretation. However, much of the rest of the training occurs on the job and is dependent on the participant's level of knowledge/experience with backcountry travel, GPS surveying, GIS/photogrammetric software, data management, data analysis, and reporting.

Learning Goals: Participants will learn about photogrammetry and remote sensing applications in National Parks, as well as how to access historic and archived datasets. Participant will learn how to independently plan and implement a project, collaborate with multiple disciplines, and communicate effectively with varying audiences. Skill development will focus on those required of GIS related careers within the Federal government, with a focus on the unique mission of the NPS and the complex history of Alaska. Participant may also be exposed to surveying and mapping grade post-processing software and structure-from-motions software, and the integration of data produced by such into a GIS.

SUPERVISORS/MENTORS	
Primary Supervisor/Mentor: Britta Schroeder GIS Specialist PO Box 9 Denali Park, AK 99755 (907) 683-6243 | britta_schroeder@nps.gov www.nps.gov/dena	**Secondary Supervisor/Mentor:** Dave Schirokauer Resources Team Lead PO Box 9 Denali Park, AK 99755 (907) 683-9605 | dave_schirokauer@nps.gov www.nps.gov/dena