

## **POSITION ANNOUNCEMENT:**

### **FUTURE PARK LEADERS of EMERGING CHANGE**

The National Park Service (NPS) is pleased to support the *Future Park Leaders of Emerging Change* (FPL) internship program as a pathway for exemplary students in higher education (advanced undergraduate students and graduate students) to apply their skills and ideas to park-based challenges and solutions. The program offers 12-week paid internships which allow students to gain valuable work experience, explore career options, and develop leadership skills through mentorship and guidance while helping to advance NPS efforts on emerging management issues. Successful students may be eligible for non-competitive hire into federal positions for which they qualify following completion of all academic requirements.

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### **Understanding and Communicating the Rapid Loss of Coastal Glaciers through Terminus Mapping and Repeat Photography**

Kenai Fjords National Park/ Resource Management Division  
Seward, Alaska

#### **PROJECT SUMMARY**

Understanding changes to tidewater glaciers is imperative to nearshore marine health as tidewater glaciers are important environmental drivers within fjord ecosystems. This project will measure and document rates of change of Alaska tidewater glaciers currently at the cusp of retreat from the marine environment and will communicate results to the public and scientists interested in understanding changing fjord dynamics.

#### **INTERNSHIP PROJECT BACKGROUND**

Kenai Fjords National Park's enabling legislation directs park managers to "...maintain unimpaired the scenic and environmental integrity of the Harding Icefield, its outflowing glaciers and coastal fjords...in a natural state..." but the "natural state" of the park has been one of transition, requiring continuous monitoring to understand and describe the current condition. Today, glaciers cover half of the park and are shrinking. In recent years, the rate of glacier change has increased. Glaciers are one of the main features that attract visitors to Kenai Fjords. In 2018, ~123,000 people viewed the park's coastal glaciers from tour boats and ~170,000 visited Exit Glacier, the only road accessible glacier in the park. Results of recent social studies indicate that park visitors are already less-than-satisfied with their experience at Exit Glacier because of recent retreat and are less likely to be interested in visiting if it retreats more. This could impact the local economy in Seward, the park's gateway community. Understanding the rate of change of these glaciers can help park managers anticipate and prepare for changes in park visitation and visitor experience.

## **INTERNSHIP PROJECT DESCRIPTION**

This project directly contributes to glacier monitoring efforts. It involves developing a terminus position database for a subset of coastal glaciers, calculating individual glacier rates of retreat based on these data, and disseminating this information via a report (or journal article) and a StoryMap. Results of this project will update park managers of the current state of coastal glaciers and rate of melt which will inform future scenario planning. The intern will have the opportunity to interact with park staff, including managers, and local tour operators to hear their stories of glacier change in the park and will include these personal perceptions (the human factor) of glacier change in the StoryMap. The report will communicate changes to park management and other researchers. The StoryMap will present the findings in a way that the public can understand.

### **Internship Tasks**

1. Develop a glacier terminus position database
  - Data mining: Identify, download, and process satellite imagery from sources such as USGS Earth Explorer
  - Data development: Digitize ice margins for coastal glaciers
  - Calculate glacial retreat rates
  - Create metadata
2. Write an NRSS report (or journal article) to document methods and results.
  - Create maps to illustrate glacier retreat
  - Document methods and results of terminus measurements and rate of retreat calculations through clear and concise writing.
  - Incorporate repeat photos to visualize glacial melt and landscape change
  - Build a StoryMap for the park's website incorporating maps, graphs, and repeat photos into an NPS template to communicate glacier change throughout the park.
  - Present findings to a parkwide, inter-division audience of managers, scientists, and interpreters.

### **Internship Products**

Successful completion of this project will result in:

- A geodatabase of coastal glacier terminus positions and associated satellite imagery with metadata
- Maps of historic terminus positions for individual glaciers illustrating glacial retreat
- An NPS NRSS report or journal article on coastal glacier change using newly mapped rates of retreat and repeat photography
- A StoryMap explaining glacial retreat on the Kenai Fjords' coast using terminus position data and repeat photos

## **QUALIFICATIONS**

The successful candidate will have demonstrated experience and understanding of ArcGIS and good data management practices. An advanced degree in earth sciences or enrollment in a graduate program is desired but not required. Good communication skills, including writing technical reports and outreach for the public, are required. The most qualified applicants will be organized, self-motivated, and able to work independently.

The most qualified applicants will possess the following:

- Proficiency in ArcGIS and spatial data management
- Currently possess or be pursuing an advanced degree in earth sciences
- Experience communicating science through writing, speaking, and social media
- Organized
- Self-motivated
- Ability to work independently

### **LEADERSHIP DEVELOPMENT**

The intern will work independently but with guidance from the park's Physical Scientist. The intern working on this project will be provided a list of goals and expectations, a suggested timeline for completion of each task, and general guidance and feedback throughout the season to set them up for success. For the right person, this will foster sincere enthusiasm for the project. When employees work on projects that are interesting, when their work is valued, and when they are set up for success with achievable goals with markers of progress, they do succeed and are awarded with recognition that they are the expert in their project, a leader in their work, and they will naturally strive for professionalism.

In addition, the intern will be involved with:

- Collaborative science. The intern will work with the park physical scientist, who coordinates all glacier monitoring work in the park.
- Natural resource and NPS management. The intern will work with park managers, other physical scientists, NPS science communicators, and regional GIS staff.
- Safety training. The intern will have the opportunity to attend the NPS Operational Leadership 16-hour course.
- Science communication. The park's science program is integrated with the Interpretive Division. In addition to developing science writing skills, the intern will help interpretive staff in communicating scientific findings at the park. The intern will present findings to a parkwide, inter-division audience of managers, scientists, and interpreters.

### **DATES OF POSITION**

This position will ideally start in mid-May and last 12 weeks ending in August, but we are very flexible. Approximate dates of internship: 05/17/2020 – 08/07/2020

Absolute internship completion: 9/25/2020.

## **COMPENSATION**

This initiative supports one student at \$16/hour for 12 weeks, or 480 hours.

## **HOUSING & TRAVEL**

The FPL provides a travel stipend to all interns to supplement the cost of student travel to the park site.

Park housing consists of a shared 3-bedroom apartment in town or a dry cabin near Exit Glacier.

Some overnight travel in the fjords via the park's live-aboard marine vessel or smaller boat may be required.

## **WORK ENVIRONMENT**

The majority of the work will occur in an office setting at park headquarters. The office space will likely be in a cubicle with other staff working nearby. There will be some opportunities to assist with fieldwork including taking repeat photos of the coastal glaciers and/or assisting with mapping the terminus of Exit Glacier using a mapping grade Trimble GPS unit. Potential fieldwork at Exit Glacier will require hiking on a trail or possibly off-trail on a gravelly outwash plain. Potential fieldwork on the coast will involve boating in marine waters, either on a small (17 ft) skiff or on a 50 ft live-aboard. The park can provide rain gear, rain boots, and any other required gear such as a backpack, sleeping bag for overnight coastal trips, etc.

## **CONTACT INFORMATION**

Park Service Supervisor and Project Advisor:  
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