



POSITION DESCRIPTION

Winter 2023

NPS UNIT: Southwest Alaska Network

Position #: 208

Position Title: Hydrology Assistant

Number of positions available: 1

Primary natural resource discipline: Physical Sciences

Position Keywords: Water, temperature, salmon, phenology, climate change

Location: Anchorage, Alaska

Can this position be fully remote: Yes

POSITION DESCRIPTION AND WORK PRODUCTS

Project Description: Water temperature regulates key physical and biological processes in freshwater systems. In turn, water temperature is regulated by air temperature at broad scales. Given that air temperature has risen in Alaska and is projected to continue rising throughout this century, monitoring water temperature is a crucial step toward managing freshwater resources in Alaska. It is also a crucial step toward retaining thriving populations of sockeye salmon (*Oncorhynchus nerka*), a temperature-sensitive keystone species in southwest Alaska. In fact, two National Parks in southwest Alaska - Katmai (KATM) and Lake Clark (LACL) - were established to protect the waters that maintain these salmon populations.

The Southwest Alaska Network (SWAN) is one of 32 regional networks established as part of the National Park Service Inventory and Monitoring Division (IMD). SWAN monitors water temperature at more than 100 sites according to its protocol. While these sites overlap areas used by sockeye salmon for rearing and migration, they do not include areas used for spawning and incubation. Therefore, SWAN monitoring addresses part of the salmon life cycle, while ignoring the phases with the lowest optimal temperature ranges.

To address this issue, SWAN initiated a pilot study in 2014, recording year-round water temperature at sites with known or suspected sockeye salmon spawning and incubation. Temperature loggers were co-located above and below the substrate surface (i.e., in the water column or sediment) at stream channel and lake beach sites. Four of the sites were in KATM and six were in LACL. Although loggers remain deployed at nine of these sites, the data have yet to be examined in depth.

SWAN is seeking an intern to help finalize, summarize, and analyze the pilot study data, and then convey the results in a formal technical report. Specific tasks of this position will be to: (1) finalize the raw data and associated metadata via uploading, correcting, and grading them in a database called AQUARIUS; (2) produce summary statistics for the data using AQUARIUS and R; (3) predict hatching and emergence timing for sockeye salmon at these sites using an existing developmental model and either the above- or below-substrate temperature data; (4) compare predictions based on the above-substrate data with predictions based on the below-substrate data, as previous studies have relied on the former as a proxy for the latter; and (5) document findings in a publishable report. Time permitting, the intern could project future hatching and emergence timing for sockeye salmon at these sites using estimated changes to water temperature due to climate warming. Alternatively, the intern could explore relationships between the pilot study dataset and other SWAN datasets pertaining to water quality and weather.



POSITION DESCRIPTION

Winter 2023

- Work Products:**
- Uploaded, corrected, and graded water temperature data for all pilot study sites, with the data made publicly available through the NPS database, AQUARIUS
 - Tabular and graphical synopses of summary statistics (from Task 2) and hatching/emergence timings (from Task 3) at each site
 - Technical report documenting methods and results, intended for publication in the NPS Natural Resource Report series
 - R code created during the course of the project, fully commented for transparency and reproducibility
 - Intermediate datasets generated during the course of the project

NATURAL & PHYSICAL WORK ENVIRONMENT

COVID permitting, work will be indoors at the Alaska Regional Office located in downtown Anchorage. Office space and a laptop will be provided.

Anchorage is Alaska's most populous city, with a diverse population of ~300,000 residents and a landscape bordered by mountains and ocean. It has a subarctic climate with strong maritime influences that lead to relatively moderate winter weather, compared to Alaska's interior. Average daytime winter temperatures range from ~5 to 30 °F (-15.0 to -1.1 °C). High latitude causes winter days to be short (as little as ~6 hours of daylight), however the ability of snow cover to reflect ambient light and brighten surroundings is substantial.

All standard amenities are available in Anchorage, including hospitals, schools, universities, restaurants, museums, theaters, and airports. Indoor and outdoor activities abound. In winter, outdoor activities include skiing (classic, skate, downhill, backcountry), snowboarding, snowshoeing, ice skating, and fat tire cycling, among others. Trails and lakes throughout the city are groomed and hot-mopped (respectively) during winter, and are available for recreation free of charge.

QUALIFICATIONS

Applicants must have strong backgrounds in data analysis, as demonstrated through coursework in statistics, applied mathematics, ecological modelling, etc. Applicants must also be proficient at programming in R software. Experience communicating scientific information verbally and in writing and the ability to work independently and meet agreed-upon deadlines are also required. An understanding of Pacific salmon ecology is not required, but would be helpful.

The applicant must be a U.S. citizen or U.S. permanent legal resident ("green-card-holder"). Prior to starting this position, a government security background clearance will be required.

VEHICLE AND DRIVER LICENSE REQUIREMENTS

Applicant must have a valid driver's license to drive a government vehicle.

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



POSITION DESCRIPTION Winter 2023

Park housing is NOT available. The intern will be responsible for finding housing in the nearby area. Park housing is not available. Anchorage is a compact city, with many housing options available within walking, cycling, or busing distance of downtown, where the NPS Alaska Regional Office (AKRO) is located. Options range from shared housing (at the low cost end) to multi-room apartments (at the high cost end). See Craigslist for short-term rental prices (<https://anchorage.craigslist.org/search/hhh>). Note that teleworking from elsewhere might be an option, depending on the status of the pandemic and whether the AKRO is open to staff.

INTERNSHIP DATES

Start Date: 11/07/2022

Number of Weeks: 12

Flexible Start Date: Yes

LIVING ALLOWANCE

12 Weeks (\$580.00/week = \$6960.00)

RELOCATION ALLOWANCE

1000.00

AMERICORPS PROGRAM



AmeriCorps

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.

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.

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.

Partners

This position is offered through the National Park Service's Scientists in Parks (SIP) Program in partnership with various organizations.

