

Project Summary

Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Serpentine Hot Springs Microbiology

Discipline: Natural
Type of Project: Technical Assistance
Funding Agency: National Park Service
Other Partners/Cooperators: Montana State University
Effective Dates: 2/1/2011 - 12/31/2011
Funding Amount: \$7,050

Investigators and Agency Representative:

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Project Abstract: Bering Land Bridge National Preserve (BELA) is one of 4 NPS park units administered collectively as Western Arctic National Parklands (WEAR). Serpentine Hot Springs is located in the southern portion of BELA. The hot springs are accessible only by air. Infrastructure there consists of a small bathhouse and bunkhouse; both in poor condition. Serpentine is popular with a variety of user groups including Native users from surrounding villages, local users from Nome, recreational users and pilots from out of the area, hunters and hikers. Due to the sometimes conflicting viewpoints of the various user groups, as well as the traditional importance of the site to the Native community, management of Serpentine Hot Springs is subject to significant local scrutiny. In December 2009, NPS managers and park planners convened to begin developing a site management plan (in the form of a GMS Amendment/EA) for Serpentine. During the initial scoping meeting, it quickly became clear that significant data gaps exist with regard to our understanding of the unique natural resources and natural processes of the site. The hydrology, geochemistry, microbiology and water quality of the site is undescribed. This information is critical to planning efforts at the hot springs. NPS seeks a cooperative agreement with geothermal microbiology experts at Montana State University (MSU) to collaborate on the microbiology component of this study. Due to the latitude, isolation and uniqueness of Serpentine Hot Springs, there is a likelihood of rare and/or endemic microorganisms there. Samples were collected in 2010. Under this agreement, MSU will analyze these data, collaboratively interpret this information in an interdisciplinary fashion and determine the best course for preparing and presenting data to park management, the public and the scientific community. This effort will be performed in direct collaboration with hydrologists, biologists and chemists from NPS and USGS. Information acquired through this agreement is directly applicable to planning and management of sensitive resources at Serpentine Hot Springs.

Objectives

1. To fill data gaps with regard to microbial species richness, diversity and rarity in thermal waters of Serpentine Hot Springs.
2. To collaborate closely with hydrologists, biologists and geochemists to analyze and interpret these data in an interdisciplinary fashion.
3. To make the information available in a citable interdisciplinary technical report (NRTR) to NPS managers engaged in the site planning effort for Serpentine Hot Springs.

Outcomes with Completion Dates: Final report due by August 31, 2011

Keywords: hydrology, geochemistry, microbiology, water quality, Serpentine Hot Springs, Bering Land Bridge National Preserve (BELA), Montana State University