

Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Citizen Science from the Top - student research in the Tundra

Discipline: Natural
Type of Project: Research/Education
Funding Agency: National Park Service
Other Partners/Cooperators: Metropolitan State University of Denver
Effective Dates: 7/1/2013 - 12/31/2014
Funding Amount: \$10,812

Investigators and Agency Representative:

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Project Abstract: During the summer 2013 field season (June through September), water samples will be collected once a month at three locations along Trail Ridge Road (Figure 1). Students will be recruited to participate in the project during the summer. Conductivity, pH, and temperature will be collected in-situ, whereas approximately 100 ml of water will be collected for analysis in MSU Denver's laboratories. Total Nitrogen, Ammonium, Nitrite, Nitrate, Phosphate, and Hardness will be measured using HACH[®] colorimetric kits.

The three sites were selected based on unique environmental characteristics. A saddle exists between sample points 1 and 2. Because of its concave curvature, the saddle collects snow and divides water flow to the Fall River and Big Thompson River watersheds. The sample locations contain ponded water in shallow bogs throughout the field season. Snow pack provides water in the early Spring through Summer; whereas ground water and melting ice in soil provides water from late Summer to early Fall.

As part of the PI's Environmental Field Studies class during the Fall 2013 semester, students will gather additional field data and will analyze the nutrient content in the water samples using HACH[®] water quality kits. The students will then use the data to design a scientific research paper as a requirement of the class.

The objectives of this project are as follows:

1. Provide baseline data about water quality at three high elevation sites located on the tundra near Trail Ridge Road (Figure 1); this is an extension of previous class projects in the tundra of ROMO.
2. Evaluate the seasonal change in water quality;
3. Expose underrepresented and underserved MSU Denver undergraduate students to hands-on, applied research.

Outcomes with Completion Dates:

1. Collect water samples from July 1st to September 30th 2013 (one per month).
2. Students analyze water quality data as part of the PI's Senior Experience course (Fall semester 2013)
3. A report written created by students will be submitted by Dec. 31, 2013.
4. Students will present their project at the Continental Divide Research Learning Center conference during the Spring 2014.
5. A poster for display (Spring 2014)

Keywords: Nitrogen, citizen science, students, alpine tundra, baseline data, water quality, Rocky Mountain National Park, Metropolitan State University of Denver