

2020 Project Report

Lead investigator: Karen Jorgenson, MS Student, University of Wyoming

Title of grant: The role of food web structure and resource availability in providing refugia for threatened alpine invertebrates.

Progress

Fieldwork was completed between August 5th and August 18th, 2020. Along with a larger team of researchers I hiked or backpack to ten alpine streams in Grand Teton National Park and adjacent wilderness areas. This exceeded the minimum planned requirement of six streams. Sites were sampled for aquatic invertebrates, algae, biofilm, detritus, plants, and water samples. All sample types were successfully collected at each site. Adequate biomass of meltwater stoneflies in genera of particular interest, *Zapada* and *Lednia*, were collected at many sites. All of the samples are currently housed at the University of Wyoming.

Sample analysis is over halfway completed and I expect to be finished by March 2021. All samples were prepped and submitted for stable isotope analysis to the University of Wyoming Stable Isotope Facility. These samples have all been analyzed and I have received all of these data. The lab work that remains is to analyze the food resources for phosphorous content. I have not yet started statistical analysis besides some preliminary data exploration.

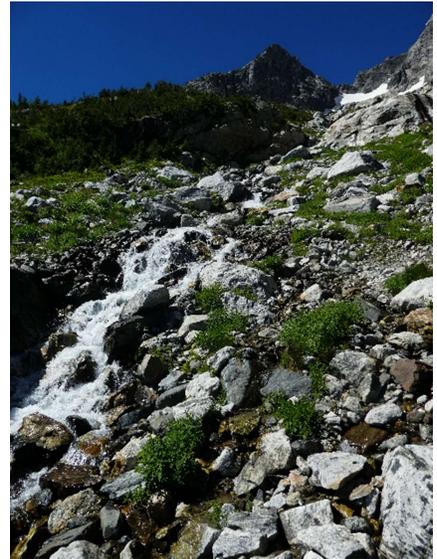


Figure 1. Sampling site below Skillet Glacier.



Figure 2. Sorting stonefly nymphs.

The global pandemic had a small impact on field and lab work, but no major setbacks were encountered. Ideally, I would have liked to start fieldwork a little earlier in July, but travel restrictions from the University of Wyoming did not allow this. However, all vital fieldwork was able to be completed in August. All field work was successfully completed without any team members contracting COVID-19. Lab work was slightly slowed by reduced access to the Stable Isotope Facility, but alternate lab space was found that suited our sample prep needs.

Use of Funds

This grant provided me with \$4,010 of funding from the MBRWF. Travel costs were \$668, research equipment and supplies were \$819, and the remaining \$2523 was used to pay for samples analysis at the UW Stable Isotope Facility. Travel costs were not as large as expected due to a shorter sampling season, and excess funds were used for isotope analysis.

Conclusions

We had a successful field season despite challenges due to the global pandemic. I am on track to meet my goals of completing sample analysis by March and having a manuscript completed by the end of 2021. This grant has made a large contribution to my research by funding almost all of the stable isotope analysis and travel costs, as well as supplementing research supplies.