

Project Completion Report

Rocky Mountains Cooperative Ecosystem Studies Unit (RM-CESU)

Project Title: Jerry O'Neal NPS Student Fellowship Program

Project Code (such as UMT-72 and/or the "J" number): UMT-238; J1434100037

Type of Project (Research, Technical Assistance or Education): Education/Research

Funding Agency: National Park Service

Partner University: University of Montana

NPS Agreements Technical Representative (with complete contact information):

Tara Carolin, Director, Crown of the Continent Research Learning Center, Glacier National Park, P.O. Box 128, West Glacier, MT 59936; 406-888-7919, tara_carolin@nps.gov

Principal Investigators (with complete contact information):

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Start Date of Project: August 1, 2010

End Date of Project: June 30, 2014

Funding Amount: \$15,000

Number of Students Involved, and Type of Student (Undergraduate, Graduate, Post Doctorate): 3 Graduate Students and 1 Undergraduate Student

Project Summary, including descriptions of project deliverables, work accomplished and/or major results. If the information is restricted (e.g. location of endangered species or cultural resources), indicate the title and location of the final report.

2011 O'Neal Awardees

Kelsie Delaney, Microbiology B.S. candidate at University of Wyoming, "Do Tourists Bug Bacteria?' The effects of human presence and pollution on bacterial diversity and distribution in the streams of Glacier National Park." Kelsie's study will assess the status of microbial populations in selected streams in Glacier NP and measure the effect of human traffic and waste on the microbes' spatial distribution. Microbes will be identified through DNA analysis, and their distribution will be spatially modeled according to anthropogenic and abiotic parameters known to affect microbial diversity. Award: \$4000.

Brief:

http://www.cfc.umt.edu/CESU/Reports/NPS/UMT/2010/O%27neal_fellowships_11Delaney_brief.pdf

Senior Thesis:

http://www.cfc.umn.edu/CESU/Reports/NPS/UMT/2010/O%27neal_fellowships_11Delaney_report.pdf

Matt Wilson, Wildlife Biology M.Sc. candidate at the University of Montana: “Are alpine freshwater macroinvertebrates shifting upstream in response to climate change?” Matt’s study will sample and identify macroinvertebrates in McDonald Creek and will compare this current data set with historical data. This analysis will assess shifts in upstream distribution of various aquatic species. Stream temperature data will also be collected during the project. Award: \$4000; \$319.05 of which came out of this TA. Brief: still pending

Thesis: still pending

Brett Addis, Organismal Biology and Ecology M.Sc. candidate at University of Montana: “Conservation of Amphibians Diversity in Glacier National Park: Risks of Hybridization and Disease to an Isolated Species.” A new species of toad (*Bufo sp. nov.*) occurs in two temporary wetlands in a cirque basin in Glacier National Park. This population is surrounded by *B. boreas*, a more common toad that occurs throughout the park. The goal of Brett’s study is to determine whether there is gene flow between the *B. sp. nov.* population and surrounding *B. boreas*. Understanding the amount and direction of animal dispersal across a landscape will provide important information on potential hybridization and disease transmission processes. Award: \$4000; \$3638 of which came out of this TA. Brief: expected spring 2013

Thesis: expected spring 2013

2012 O’Neal Awardees

Cameron Naficy, Ph.D. Candidate – Geography at the University of Colorado at Boulder: “Cross-scale assessment of spatiotemporal patterns and drivers of fire effects in mixed-severity fire regime forests of *Larix occidentalis*, Glacier National Park” Cameron’s study will take a multi-method approach to assessing historical and contemporary patterns of fire severity in western larch (*Larix occidentalis*) forests in Glacier National Park. This research is particularly important to managers because fire is dominant process affecting large-scale vegetation patterns in Glacier. Award: \$4000; \$3899.95 of which came out of this TA. Brief:

http://www.cfc.umn.edu/CESU/Reports/NPS/UMT/2011/O%27Neal_fellowship_Naficy_brief.pdf

Thesis: still pending