Science Learning, Native Language and Ecological Context in Contrasting Mountain Systems (Yellowstone Ecosystem, USA & Altai Mountain System, Russian Federation)

This is a collaborative research project between Montana State University (MSU), Bozeman, USA and Gorno-Altaisk State University (GASU), Altai Republic, Russian Federation. MSU & GASU have an official memorandum of understanding (2010) and have worked collaboratively in the USA and Russia for the past three years. Related prior research and creative activities have been funded by the National Science Foundation and the Altai Assistance Fund. This project builds on past work related to ecological learning in contrasting mountain systems (http://www.montana.edu/yellowstone-altai/). In this project Montana State University students will travel to the Altai Republic and work with faculty at Gorno-Altaisk University to conduct research related to native language use in learning ecological sciences in informal settings. Student researchers will conduct individual studies related to the project theme of science learning in ecological contexts. In this project we will help students learn how to conduct educational research related to the ecological learning experiences of indigenous youth (ages12-16) and the use and influence of native language in learning about environment. This research directly addresses the results of our prior NSF supported work that identified shared issues of indigenous people, natural resources and the decline of native language use among underserved populations in the Altai and Yellowstone systems.

Three cohorts of five MSU students will travel to the Altai Republic for eight weeks in the summers of 2013, 14 & 15. MSU students will comprise a research team with GASU science, education and language faculty to conduct research in the city of Gorno-Altaisk, two medium size villages such as Onguday and two small villages such as Karakol. We expect to work with youth in each setting and interview a representative sample at each site. As a research team we expect to gain a better understanding of how indigenous youth use native Altai language in informal settings to learn about environment. We expect to compare sights within the study. As part of our larger research interests in ecological learning and native people, we will conduct a similar comparative study in the Yellowstone Ecosystem with Native American youth. The studies associated with this project will add to our understanding about the extent and nature of native language use to learn science in underserved populations in very sensitive and unique ecological and cultural settings.

Intellectual Merit: This project contributes significantly to our emerging understanding of science learning in informal settings. It addresses a unique conception of ecological learning in three dimensions; personal, community and cultural perspectives. Research and education objectives align with modern conceptualizations of informal science learning as proposed by the National Academies of Science (2009). The MSU-GASU collaboration provides a holistic view of science learning and will unite diverse intellectual resources and research efforts in unique ecological and social systems.

Broader Impact: Both the Yellowstone and Altai mountain systems are of global concern as part of worldwide natural and cultural resources impacted by pervasive development, recreation and tourism activities and climate change. The underlying theoretical foundation for learning proposed in this research project is the basis for effective approaches to enable isolated rural populations to contribute traditional knowledge and wisdom to contemporary issues related to world-wide ecological and cultural issues including global climate change. Aspects of sustainability practices that are embedded in the knowledge and social processes of both marginalized and dominant societies will be better understood and taken into consideration for future research and education activities. Research outcomes will contribute to more effective informal, place-based and experiential science learning to help empower communities and decision makers in meeting challenges of sustainability. Inevitably, we expect this work to extend our understanding of science learning related to critical natural and cultural resources and their management. An understanding of how, why and where learning takes place will help extend the US and international research and education agendas related to informal science learning, natural and cultural resource management and sustainability.