



UW College of Agriculture and Natural Resources  
**Global Perspectives Grant Program**  
Project Report Instructions

**Award Period:** Fall 2018

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**Collaborative Workshop to Advance Transdisciplinary Natural Resource Management Research Opportunities with Universidad del Valle, Guatemala**

**Funding:** \$5,900.

**Non-technical summary:** We met with six faculty at Universidad del Valle, Guatemala (UVG) create a proposal to conduct research and outreach in a transdisciplinary framework for a major proposal. The project would also include active learning and mentoring of students at both University of Wyoming and UVG. This project grew out of a long-standing working relationship with UVG, the antecedents of which came from former Trustee and former ambassador Thomas Stroock that endowed UVG to create a land grant university structure in a developing country. The goal of the ultimate project was to build the capacity to solve problems to engage communities in managing lake pollution in Lake Atitlán, Guatemala, an internationally known tourist destination with 3 distinct Mayan languages along with Spanish. We proposed a trans-disciplinary framework that will train community people and students in both universities to analyze environmental problems, and initiate conversation and discussion among communities. These discussions will include how the problems began, how they affect local communities and visitors, and trade-offs between alternative solutions. The outgrowth of this effort was a proposal to NSF of \$1.597 million to be shared by both Universities.

## **1. Main results of activities planned in the proposal.**

The workshop investigated trans-disciplinary frameworks in research and outreach in the highlands of Guatemala. The study site is Lake Atitlán watershed, an ecologically and culturally diverse region with both external and internal drivers that impact the management and the long-term sustainability of the system. The patchwork of heterogeneous, multi-cultural stakeholder communities distributed across the watershed are comprised of three distinct Mayan cultures with separate languages, Kaqchikel, Tz'utujil, and K'iche', and Non-Mayan residents. The watershed has steep volcanic soils, complex hydrology and land use practices that range from commercial agro-forestry and high value specialty crops to small-scale agriculture within a tropical montane forest biome. The location and specific agricultural practices vary with stakeholder group and the socio-economic drivers differ and range from household to regional scale. The endorheic lake, at the center of the watershed, has significant water quality issues, but is a primary source of economic opportunity from commercial agriculture and tourism and is an important cultural and social resource.

The workshop lasted for three days with all of the faculty attending. Disciplines included the following

UVG:

- Agronomy and Soil Science
- Limnology
- Anthropology
- Health Management
- Environmental Science and Geographical Information Science

UW:

- Watershed Management
- Agricultural Economics

We created the joint proposal and submitted it the National Science Foundation Coupled Natural and Human Systems Division February 12, 2019 . The total requested budget was \$1.597 million with \$943,000 going to UVG and the remainder to UW. While received positive reviews we unfortunately were not chosen. We have not decided on where we will submit a revised proposal. Potential destinations could be World Bank, US AID, or back to NSF again.

## **2. Describe any future plans**

As mentioned above we are still re-considering where we will send a modified proposal. However, in the meantime our plan is submit a similar proposal to NSF or USDA for agricultural and water resource management on the Wind River Indian Reservation. We also are planning a J-Term course (January course that occurs between Fall and Spring semesters) for upper division student and graduate students to bring them to UVG and Lake Atitlán beginning this year if we get the required number of registered students. The course was proposed and accepted by both International Programs and the Risk Analysis

Committee. UVG faculty will work with us on instruction and logistics. We will try to fill the class for January 2020, and plan on offering it every J-term.

3. Outline potential impacts to a) the College of Agriculture and Natural Resources, b) the University of Wyoming, and c) the State of Wyoming

- A working understanding of trans-disciplinary frameworks and how it can be used in Wyoming and the Rocky Mountain West
- How transdisciplinary frameworks can be interweaved into multidisciplinary studies and spatial decision support systems
- Better understanding agronomic and economic issues facing small farmers in Central America
- Construction of transdisciplinary framework and decision support system proposal that will be used for water resource issues facing Wyoming residents.

4. Photos



**Figure 1. Lake Atitlan, Guatemala**



**Figure 2. Small-scale farmer with fertilizer and broccoli crop and milpa in the foreground**





**Figure 3. Students, faculty, and extension on an earlier trip leading up to the workshop**



**Figure 4. Example of agricultural development around the Lake**