

**The San Juan Collaboratory**  
*Research, Education, and Outreach*

*Serving Colorado through Problem-Oriented Research,  
Education and Outreach*



# Natural Resource Internship Program

## ***San Juan Collaboratory Overview***

The University of Colorado at Boulder, Fort Lewis College, Mountain Studies Institute, and the San Juan Public Land Center (USFS/BLM) are members of a new collaborative effort for integrated, interdisciplinary studies and education on the Western Slope of Colorado. Together, we develop multi-disciplinary, problem-oriented research and outreach efforts to serve rural Southwestern Colorado. We establish on-site learning opportunities at the undergraduate and graduate levels by building bridges between educational institutions and community groups.

## ***2008 Natural Resource Internship Program***

Eleven interns participated in an 11-week program from June 2 to August 15. The internships were based in Durango, Silverton, and Dolores, Colorado. Interns were either current or recent undergraduates. Most were from Colorado and attended a Colorado college or university. A few students from other states added diversity to the group.



The interns worked with researchers and land managers addressing issues such as climate change, land development, air and water pollution, ecosystem restoration, and community revitalization. They worked on lakes and in forests, wetlands, alpine tundra, high desert, and human communities.

The interns and many mentors participated in three program events. Orientation at Fort Lewis College included “get-to-know-you” activities, a regional environmental and socio-economic overview, a tour of local ecosystems, and a raft trip down the Animas River. During a field trip in Silverton half-way through the program, interns visited high-elevation forests and an abandoned mine site to learn about a few projects. Interns gave informal project updates and cooked dinner over a campfire. The final morning of the program, interns and a few mentors took a boat trip on Vallecito Reservoir to discuss water quality and wildfire and learn lake monitoring skills. The group then had lunch at the San Juan Public Lands Center and each intern gave a presentation about their project.

**ANYA ANGST**

**ENVIRONMENTAL MERCURY MONITORING**

*Mentors: Dr. Koren Nydick & Kyle Skaggs, Mountain Studies Institute*

Mercury from air pollution is a growing concern in the Four Corners region. Anya investigated how fire affects mercury trapped in forest soils. Anya also collected zooplankton - tiny invertebrate animals that are food for fish in lakes – to understand how much mercury has accumulated in the food web. Anya is now a senior at Fort Lewis College. She is continuing her study of mercury in forest soils as a senior thesis.



**JUSTIN ANDERSON**

**HIGH-ELEVATION ECOLOGY**

*Mentors: Drs. Heidi Steltzer & Ed Ayers, Natural Resource Ecology Laboratory, Colorado State University*



Snowmelt is coming earlier in many parts of the mountainous western US, with important ramifications for water supply and ecosystems. Justin helped set up an experiment to determine how the timing of snowmelt affects the greening and flowering of alpine plant communities. Justin also worked on a study of leaf decomposition and soil organisms in subalpine forests. Justin is finishing his biology degree at the University

of Kansas where he is doing an independent study inspired by his internship activities.

**CAMILA FIERRO**

**FEN WETLAND RESTORATION**

*Mentors: Dr. Rod Chimner, Michigan Tech University & Dr. David Cooper & Patty York, Colorado State University*

Fens are “old growth” wetlands that have accumulated peat soils over thousands of years and are sensitive to disturbance. Camila monitored water levels and vegetation in mountain fens and helped initiate several restoration projects to repair damage from drainage ditches, recreation, and animal grazing. Her daily activities included installing and monitoring groundwater wells, preparing erosion controls, setting up study plots, and planting vegetation. Camila is now a junior studying biology at Smith College.



**HANNAH GROSSMAN, CLAY KAMPF & ANDREW STRAUB-HEIDKE**  
**HYDROLOGIC INVENTORY, RESTORATION & MONITORING**

*Mentors: Kelly Palmer & Jamie Krezelok, San Juan Public Lands Center (USFS/BLM)*

Hannah, Clay and Andrew worked on water resource management projects. They surveyed and inventoried springs to gather data necessary to acquire water rights that will keep water on the Forest. They monitored changes in water quality, water quantity, and stream morphology in response to disturbances such as oil and gas exploration, fire, grazing and recreation. They also helped to restore past damage in wetlands and streams.



They gained backcountry travel skills including the use of maps and global positioning units. The three-some also were exposed to some of the current problems and issues surrounding water resource management in the semi-arid western US. They learned about the tools used for hydrologic inventory and monitoring and techniques used

for the restoration of damaged ecosystems. We also learned about the USFS as a public lands management institution and how it is to work inside this framework towards its important mission.

Hannah is a recent graduate of Colorado State University with a degree in wildlife biology. Clay returned to Fort Lewis College as a junior majoring in environmental biology. Andrew is now a senior at the University of Colorado at Boulder working towards a major in Environmental Studies.





**SAFIYA JETHA**  
**INVASIVE PLANT MAPPING**

*Mentor: Dr. Julie Korb, Fort Lewis College*

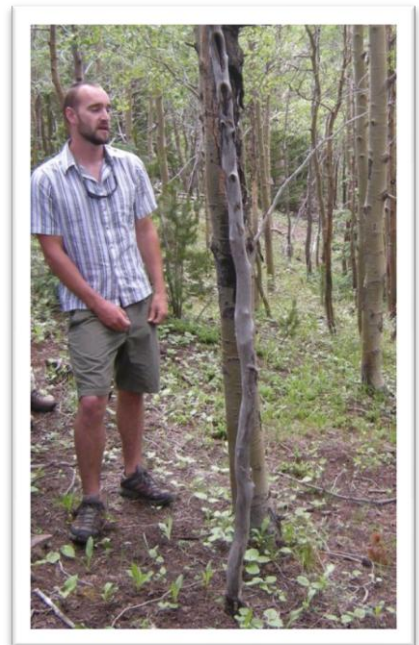
Safiya conducted an invasive plant species inventory for Aztec Ruins National Monument in Aztec, NM. She surveyed invasive plant cover and frequency and investigated relationships among species composition, biodiversity, and environmental variables like soil texture, pH, moisture, and slope. Anya's work will help develop a management plan to control invasive

species. Safiya is now a senior studying Environmental Science at Emory University.

**JACOB WILLIAM MAGGART**  
**SUDDEN ASPEN DECLINE**

*Mentor: Mark Krabath, Dolores Field Office, San Juan Public Lands (USFS/BLM)*

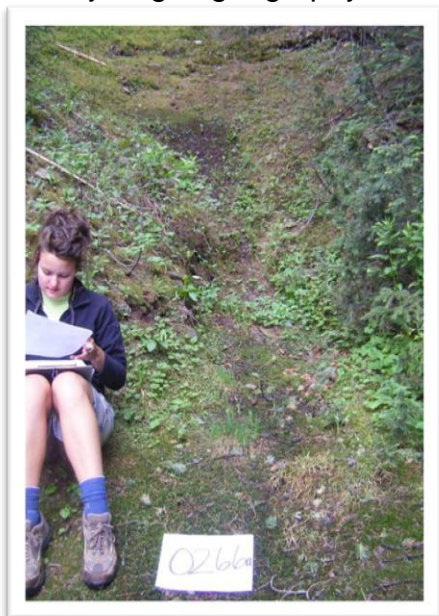
Unexpected mortality of aspen trees (termed Sudden Aspen Decline, or SAD) has occurred following the recent drought. Jake surveyed aspen by measuring their size, density, amount of regenerative growth, pathogenic infestations, and level of SAD. His data will be used to determine management actions, such as timber sale or prescribed burning. Jacob returned to the University of Colorado at Boulder for his senior year majoring in geography.



**MARY BETH MILES**  
**ABANDONED MINE LANDS MONITORING**

*Mentor: Stephanie Odell, San Juan Public Lands Center (USFS/BLM)*

San Juan County has about 150 historic mining claims just on BLM land alone. Mary Beth's internship included abandoned mine site documentation and reclamation and acid mine drainage mitigation. Her duties included identifying, documenting, and addressing potential safety and environmental hazard sites. Mary Beth returned to the University of Colorado at Boulder to finish her degree in Environmental Studies, including a senior project on abandoned mines.

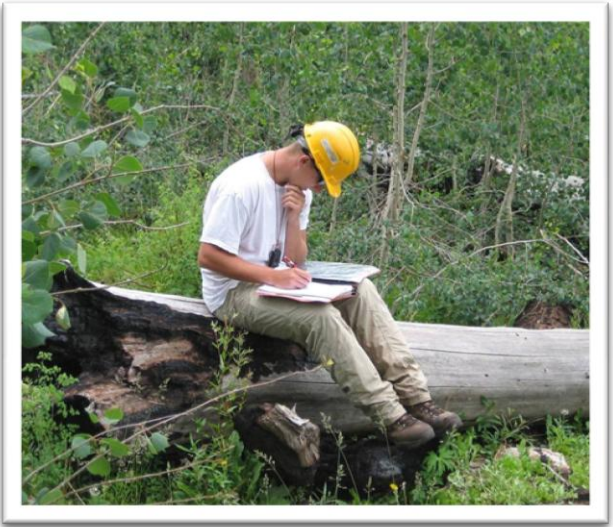


**ANDREW VERBONITZ**

**POST-WILDFIRE ASPEN REGENERATION**

*Mentor: Sally Zwisler, San Juan Public Lands Center (USFS/BLM)*

Andrew monitored the regeneration of aspen in areas burned by the 2002 Missionary Ridge Wildfire. Since aspen have tremendous value for wildlife, aesthetics, and timber sales, managers want to keep track of re-growth. He measured tree height and diameter, stand density, and the amount of regenerative growth of new aspen stems. Andrew also recorded percent cover of other vegetation types and ground-truthed the USFS GIS vegetation database. Andrew graduated from Fort Lewis College with a major in Environmental Geology just prior to this internship. Even though the program ended in August, Andrew continued his internship until the middle of October.



**JEREMY YANKO**

**ANIMAS RIVER CORRIDOR  
REVITALIZATION PROJECT**

*Mentors: Koren Nydick, Mountain Studies Institute and Marcie Bidwell, SWCA Environmental.*

Jeremy served as a trails coordinator with the task of constructing and improving trails within the mountain town of Silverton. He was involved with everything from obtaining agreements with the Town and other partners, designing the trail alignment,

soliciting volunteers and donated materials, leading a trail workshop, purchasing supplies, and actually working on the trails. Jeremy graduated from Fort Lewis College continues his position as trail coordinator.

**Program Coordinator:**

*Dr. Koren Nydick, Mountain Studies Institute*

**Major Funders:**

*San Juan Public Lands Center & University of Colorado at Boulder*

**Other Funders:**

*Fort Lewis College, Mountain Studies Institute & Colorado State University*