

SAN JUAN MOUNTAIN NOTES

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A NEWSLETTER FROM THE



The Mountain Studies Institute (MSI) is a 501(c)3 not-for-profit mountain research and educational institution and high-altitude field station with headquarters in Silverton, Colorado and an additional office at Fort Lewis College in nearby Durango. MSI's mission is to enhance understanding and sustainable use of the San Juan Mountains and its communities through research and education.

www.mountainstudies.org



NEWS

Interns Begin Work on Problem-Based Environmental Science Projects

Eleven interns are participating in a ten week program as part of the San Juan Collaboratory, a partnership of MSI, University of Colorado at Boulder, Fort Lewis College and San Juan Public Lands Center (USFS/BLM). One goal of the Collaboratory is to offer Colorado students training in addressing environmental challenges through the use of interdisciplinary science. Accordingly, most of the interns are from Colorado, but representatives from Kansas, Michigan, and Georgia round out the group. Students began their internship experience on June 2nd with an orientation to the San Juan Mountain region, including a white water raft trip on the Animas River through Durango. Interns are working with researchers and natural resource managers on a variety of projects spanning hydrology, water quality, and ecology and addressing issues such as climate change, land development, air and water pollution, aspen decline and ecosystem restoration. The program is coordinated by MSI's Director, Koren Nydick, and is funded by the San Juan Public Lands (USFS/BLM) and CU Boulder with additional funding from Colorado State University and Fort Lewis College.



Interns and some of their mentors gather at Fort Lewis College for orientation

Forum Gives Air Quality Issues a Lift

Over forty participants, including concerned citizens, local government, state agencies, tribal representatives, and federal scientists, gathered in Durango on May 29 to discuss air quality concerns in the Four Corners region. MSI organized the Forum as part of its EPA Air Toxics grant. Ozone, visibility, mercury, and nitrogen were the main concerns. Mary Uhl with the New Mexico Environment Department reported that "Very serious air quality issues need to be addressed, particularly ozone. Unless something unusual happens, we (San Juan County, NM) will be in non-attainment this summer". Koren Nydick, director of MSI, spoke about mercury in Southwest Colorado. MSI began studying mercury in the environment in 2007, taking measurements in precipitation, lake sediment and lake zooplankton. San Juan County in northwestern New Mexico is the fifth-largest emitter of mercury among all counties in the nation. This, together with other regional factors makes mercury monitoring a priority in the San Juan Mountain region.

See <http://www.mountainstudies.org/Research/airQuality.htm>.

MSI Explores the Possibility of Developing a Mercury Advisory Committee

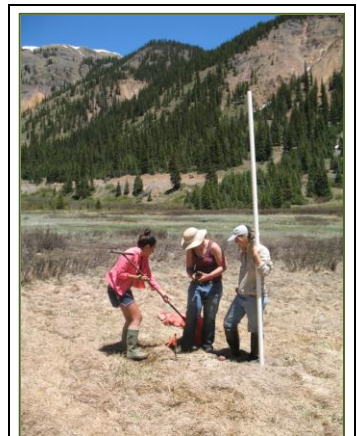
MSI is conducting a survey in collaboration with the Four Corners Air Quality Task Force to gauge the level of interest and feasibility of establishing a *Mercury Advisory Committee* (MAC). The MAC, composed of air quality managers, scientists, and concerned citizens, may engage in a variety of tasks including education/outreach, planning strategies for monitoring, work with industry to reduce emissions, etc. The MAC survey is available at <http://www.mountainstudies.org/Research/airQuality.htm>.

Trails are Focus of the Animas River Corridor Revitalization Project in 2008

MSI is leading the Animas River Corridor Revitalization Project (ARCRP) in Silverton, Colorado with assistance from the Town of Silverton, San Juan County, Bureau of Land Management, Durango to Silverton Narrow Gauge Railroad, and several others. Extensive community input was gathered by MSI in 2006 during the community visioning process. The overall project objectives include economic renewal and the development of recreational amenities including new trails, fish habitat improvements, a water park and more all based upon ecologically sound restoration activities. The goals for summer 2008 are building and improving Silverton trails, completing phase one of a wetland boardwalk, and the installation of two trail gateway art pieces. Volunteers are needed for working on trails throughout the summer. A trail building workshop will be held on July 25, 26 & 27 in Silverton. For more information contact Jeremy Yanko, Trail Coordinator, 970.903.5809 or jyanko@frontier.net

Fen Wetlands Get a Face Lift in the San Juans

Ditches in Chattanooga Fen (San Juan County, CO) will be repaired this summer as part of a two year project to restore the hydrology and vegetation to several area fens. Fens are fragile wetlands that depend on high water tables fed by groundwater inputs. Slow decomposition in these saturated conditions promotes the accumulation of vast amounts of peat (organic soils) over the course of thousands of years. These "old-growth" wetlands harbor rare plant communities and provide habitat for many species of wildlife. Ditches and erosion gullies lower the water table and cause fens to dry out. Eventually, the peat will decompose and the vegetation will change to non-wetland species. Other disturbances, such as off-road vehicles and over-grazing, can destroy vegetation and lead to erosion that forms gullies.



Intern Camila Fierro and graduate students Patty York and Erin Haglund install a monitoring well at Chattanooga Fen.

The Fen Project in the San Juan Mountains has monitored several fens in the Telluride area for over five years in order to understand seasonal and inter-annual variability. The project also has surveyed over 200 fens throughout the San Juans and prioritized several for restoration. The project team includes David Cooper (Colorado State University), Rod Chimner (Michigan Tech), Koren Nydick (MSI), Kay Zillich (San Juan Public Lands), graduate students, and an intern. A new project partner, Durango Mountain Resort, will fund the work in Chattanooga and Ophir Fens in return for wetland mitigation credits. Restoration in additional fens is funded by a grant from the U.S. EPA Wetland Development Program. A workshop on July 17, 2008 will present the results of the fen surveys and discuss fen restoration plans. A workshop in 2009 will teach restoration techniques and provide guidance for fen protection.

Mini-Grants Awarded

Since 2005 MSI has offered mini-grant funding for students and recent graduates to conduct studies in the San Juan Mountain region of southwestern Colorado and northwestern New Mexico. The goals of the program are to support the education and career development of students and recent graduates via research opportunities, and to provide needed data and information pertaining to important issues and problems in the San Juan Mountain region. MSI awarded four mini-grants to students in May, 2008. Two grants were given for continuing projects. Melanie Bergolc from Bowling Green State University will continue study of Geologic bedrock as a possible controlling factor in the community structure and biodiversity of ground dwelling beetles. Julie Crawford of the University of Pavia will continue her work with multi-scale investigations of alpine vascular plant species in the San Juan Mountains. New to MSI this year are Leisl Peterson and Michelle McCrackin. Leisl, from CU Boulder, will test climate models of range contraction for the American Pika. Michelle, from Arizona State University will look at denitrification in lake sediments across a gradient of atmospheric nitrogen deposition.

In addition, mini-grants were awarded to Fort Lewis College students as part of a collaborative program between MSI and FLC. Amber Vasquez, Jennifer Thogerson and Jade Leigh Heath worked together on a geology project with Professor David Gonzales. Students Wade Johnston, Beverly Maxwell, Gabrielle Hesselius and Megan Hayes will study geology, biodiversity and fire ecology.

Mountain Climate Conference Draws 120+ Visitors to Silverton, June 9-12.

Over 120 scientists visited Silverton for the MTNCLIM research conference, sponsored by the Consortium for Integrated Climate Research in Western Mountains (CIRMOUNT) and hosted by MSI. The event kicked off with a free seminar and workshop for the public and included three days of presentations and discussion about climate, its impacts, and strategies to adapt to changes in the Mountain West.

To the delight of many locals, scientists filled Silverton's lodging establishments and restaurants during an otherwise slow period. The Participants were similarly pleased and several said that it was one of the best conferences they had attended.

MSI's Dr. Koren Nydick presented *The San Juan Climate Initiative: A Stakeholder-Scientist Partnership for Understanding and Adapting to Place-Based Climate Change* during an invited session on climate adaptation initiatives. MSI also presented a poster titled: *"GLORIA" Long-Term Monitoring Site for Detection of Climate-Induced Changes in Alpine Plant Communities in the San Juan Mountains, Colorado.* To view MTNCLIM presentations and posters, please visit: <http://www.fs.fed.us/psw/mtnclim/>.



Participants in the 2008 MTNCLIM conference in Silverton, CO come together for a group photo.

Climate Change Adaptation Workshop for Natural Resource Managers

On June 12 following the MTNCLIM Conference, fifty-five scientists and resource managers participated in the Climate Change Adaptation Workshop hosted by MSI and CIRMOUNT. The agenda included presentations about the climate outlook for the San Juans, climate change adaptation strategies, and examples from Tahoe National Forest and Olympic National Park. This workshop was a follow-up to a 2006 MSI-led climate change conference focused on the San Juan Mountain region. This earlier conference kicked off the San Juan Climate Initiative, a stakeholder and scientist driven effort, which has an overall objective of providing strategies for climate change adaptation and planning while using the best science available. The goals of the June 12, 2008 workshop included continuing to educate stakeholders about climate change in our region; gather stakeholders' input on current/future climate stresses on natural resources and existing/future vulnerabilities; learn from efforts in other regions and begin to think about what kinds of adaptation and mitigation strategies could be used in our region; and discuss how to organize the San Juan Climate Initiative.

A premise of both the San Juan Climate Initiative and this workshop is that even if greenhouse gas emissions are significantly lowered, a considerable amount of climate change will occur this century. Significant warming has already been observed. Global greenhouse gas emissions are not currently declining, and actually the rate is accelerating. For these reasons, developing adaptation strategies for managing natural resources in a warmer future is prudent. While the focus is adaptation, these efforts also seek to include strategies that also incorporate mitigation (lowering of greenhouse gas emissions or sequestering carbon) into natural resource management.

Facilities Update: MSI shows flexibility in providing field station facilities.

MSI's quest for the acquisition of the Avon Hotel has been an up and down journey. By April 1 the Avon Fund Drive had surpassed the goal of \$614,500 for the purchase of the historic hotel. As an important part of our process, MSI hired an engineer to perform a structural evaluation of the building during the pre-purchase inspection period. The analysis revealed unforeseen major structural issues that were not discovered in a previous inspection and would need to be immediately addressed. MSI worked diligently with its many partners to determine the feasibility of and investment required to restore the Avon. Additional

engineering analysis, a thorough cost estimate and a reappraisal of the building were completed. It was concluded that in order to make such extensive repairs a portion of the funds raised to purchase the hotel would have to be used for the structural stabilization of the building. MSI worked to negotiate a price concession from the owner that would allow MSI to proceed with the purchase. Unfortunately, an agreement could not be reached. The staff and board at MSI did not believe that it would be responsible to move forward with the purchase given the new information, and at last week's MSI board meeting it was decided to discontinue our attempt to acquire the Avon Hotel.

Despite these challenges, MSI staff has secured lodging for all of its anticipated guests for the summer of 2008. By utilizing the Silverton Hostel as well as a portion of the Outward Bound cabins and alternative classrooms, office and lab space, MSI will still provide a terrific environment for researchers, educators and students to work in Silverton. We will continue to utilize local resources as we work to secure a permanent home.

The MSI staff and board are planning a full day of strategic planning in July to decide the next course of action towards the purchase of an MSI field station that will fit our future needs. The institute expects to be pursuing a new facility plan in the fall of 2008.

WHO HAS BEEN VISITING MSI?

It was a snowy and busy winter in Silverton with over 220 inches of snow in town and a 240% increase in MSI lodging guests compared to last year. Sara Simonson with the NREL at Colorado State University assisted snow researchers over the holidays. January was busy with guests that included the annual Prescott College Avalanche Forecasting Class lead by Josh Hirshberg and teaching Assistant Misha Currie, a Fort Lewis College KDUR Public Radio retreat, the San Juan Bioenergy Group, and Brandon Vogt's Field Studies, Snow and Ice and Physical Geography class from the University of Colorado – Colorado Springs. Mark Williams brought down a large San Juan Collaboratory group from CU Boulder in February and Lee Frazer was up from FLC with Adventure Education. Prescott students were back in February when Chris Marshall led a Wilderness Leadership class. Don Friend, who first came to Silverton as a student of Mel Marcus, brought a group from Minnesota State University for a Winter Field Camp. February ended with Ben Pritchett's Level 3 Avalanche forecasting class. HP Marshall organized a Snow Characterization Workshop in March, and this international group of snow professionals hopes to make it an annual event. Sam Fitch from CU Boulder brought his graduate Environmental Policy Class. Tom Painter (University of Utah) and his research crew stayed with MSI while studying the effects of dust on snow. The month of May saw the return of "Grif" Griffin and her Natural Resource Management class from Grand Valley State University in Allendale, Michigan. Randy Wilson from Gettysburg State was back in Silverton with a San Juan Environment Class. Julie Korb from FLC took her Field Ecology class to Silverton to study late-season snow ecology with assistance from MSI's Koren Nydick. Kyle Skagg's returned for his third summer as a MSI research assistant. May closed out with Nick Pepin from the University of Portsmouth, England and his group of students studying mountain climates and working on independent projects. In early June, San Juan Collaboratory interns Mary Beth Miles, Camilia Fiero, and Justin Anderson and MSI mini-grant recipient Melanie Bergolc arrived for their summer stay. Heidi Seltzer and Ed Ayers from CSU visited to attend MTNCLIM and continue their forest research. Heidi also set up a climate change experiment in collaboration with Chris Landry and intern Justin. Ten others attending the MTNCLIM conference stayed with MSI in early June. After MTNCLIM, the CSU Geology Field Camp set up residence with MSI for a few weeks. Jim Elser's research crew from Arizona State University arrived in late June to unload their gear into the MSI lab for a lake nutrient experiment they will conduct in July and August.

VISITING SCIENTIST in the SPOTLIGHT

Imtiaz Rangwala is a PhD candidate in the Department of Environmental Science at Rutgers University. He was awarded a MSI mini-grant to analyze the past 100 years of climate records in the San Juan Mountains and look at relationships among factors such as temperature, snow cover, and climate oscillations like ENSO. His work was highlighted in a recent article in the Durango Herald, and he presented his work at the MTNCLIM conference recently held in Silverton.

Imtiaz spent the summer of 2007 at MSI where he conducted much of this work. He writes: "It makes a great difference to be physically close to the focus of your study. By merrily traversing the landscape, I was able to appreciate the variations in several physical aspects of the region like topography, vegetation and snow cover. These observations were important to my own understanding of several physical processes at work. My presence at MSI also connected me to the region, the people and their concerns. After all, MSI is established to address the environmental problems of the region by involving the community through a non-profit and multidisciplinary approach. My involvement with MSI also helped me to think ahead on where my scientific skills and interest can lead me. During my stay at MSI, I felt like part of the local and the visiting scientific community. These interactions with the people and landscape in Silverton were useful at both the personal and academic level. They generated enthusiasm, motivation and concern towards my own work. I cannot give thanks enough for the generous affection I received in Silverton. My stay in Silverton was tremendously good for my mental and physical well-being. In the end, I really feel lucky to have been at MSI, and my involvement continues."



Imtiaz Rangwala (on left) with other MSI visitors near Grizzly Peak, San Juan



Interns Anya Angst and Safiya Jetha collect soil samples for a project investigating interactions between fire and mercury.

OPPORTUNITIES

SEMINARS, FIELD TRIPS, EXHIBITIONS

Free and open to the public. Seminars will be held at the Silverton Town Hall unless specified otherwise. Field trips have various locations. More info at www.mountainstudies.org under "What's New" or call 970-387-5161.

- June 9, 12-1:30pm **Seminar/Discussion: Climate Change & the Mountain West**
- June 19, 7:30 pm **Seminar/Discussion: How's the Air Up Here? Update on Air Quality**
- June 26, 7:30 pm **Seminar/Discussion: Desert Dust to Mountain Soils**
- July 4 **Join the MSI Float in Silverton's July 4 Parade!**
- July 10, 7:30 pm **Seminar/Discussion: Moving Forward, Linking Trails, Community & Recreation**
- July 17, 7:30 pm **Seminar/Discussion: Abandoned Mine Clean-Ups**
- July 26, 9 am **Field Trip: Wildflower Hike**
- July 26, 5-7pm **Art Exhibit: Mountain - the Work of Judy Graham**
Caledonia Boarding House Historic Museum (next to the Courthouse)
- July 31, 7:30 pm **Seminar/Discussion: Zooplankton in Mountain Lakes (tentative)**
- Aug 9, 9 am **Field Trip: Discover the Snowden Rock Glacier**
- Aug 14, 7:30 pm **Seminar/Discussion: Metals Sources in AMD Streams (tentative)**

WORKSHOPS

Check www.mountainstudies.org for details & registration info.

- **Air Quality Forum, May 29, Fort Lewis College, Durango, CO**
- **Climate Change Adaptation Workshop for Natural Resource Managers**
June 12, 12:30-5pm, Town Hall, Silverton, CO
- **Tree-ring Stream Flow Reconstruction for Water Management**
June 13, 9am-12:30, Fort Lewis College, Durango, CO
- **Trail Building Workshop, July 25, 26 & 27, Silverton, CO**
- **Fen Wetland Workshop: Assessment Results & Restoration Preview, July 17, Silverton, CO**

VOLUNTEERS NEEDED

Trail Building in Silverton– Contact Jeremy Yanko (970-903-5809)
Wetland restoration and monitoring – Contact Koren Nydick (970-247-7071)
MSI Fundraising – Contact Susan Hakanson (970-379-3303)
Field Station Facilities Development – Contact Bill Dodge (970-387-5165)
General Help in Silverton – Contact Charlie Smith or Ali Morse (970-387-5161)

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MSI ANNUAL MEMBERSHIP FORM - 2008

(or go to the online membership form at www.mountainstudies.org)

Member Information

Title _____ First Name _____ Last Name _____
Mailing Address _____
City/State/Zip _____
Day Phone (____) _____ Evening phone (____) _____
Email _____ Fax (____) _____

Contribution Amount

___ Sapling (student) \$15 ___ Upper Montane \$100 ___ Alpine \$1,000
___ Woodland (individual) \$40 ___ Subalpine \$250 ___ Peak \$2,500
___ Ponderosa (Family) \$75 ___ Timberline \$500 ___ Other: \$ _____

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MSI is a federally recognized 501(c)3 tax-exempt organization. We will promptly send your tax receipt letter. In addition, contributions >\$200 are eligible for a 25% Colorado State Tax Credit. For more information on planned giving or the endowment fund, please contact Charlie Smith at 970.387.5161. For Program Information, contact Koren Nydick at 970.247.7071.

Thank you for your generosity!