
Program Agenda

8:30 - 9 *Registration*

9 - 9:05 *Welcome and Announcements*

9:05 - 9:50 *Special Tribute to Joyce Gelhorn
Cal Whitehall, Maddie Estin, and Jim and Kathy Snow*

9:50 - 10:20 *Song vs Symphonic Metamorphosis of the Alpine - Change is in the Air
Dr. Bill Bowman*

10:20 - 10:50 *Are High-Elevation Trees Less Defended Against Insect Attack than
Low-Elevation Trees?
Scott Ferrenberg*

10:50 - 11:15 Break

11:15 - 11:45 *One Fish Too... Many Fish?
Understanding the Changes Caused by Fish Introductions in Lakes at
High Elevations.
Tommy Detmer*

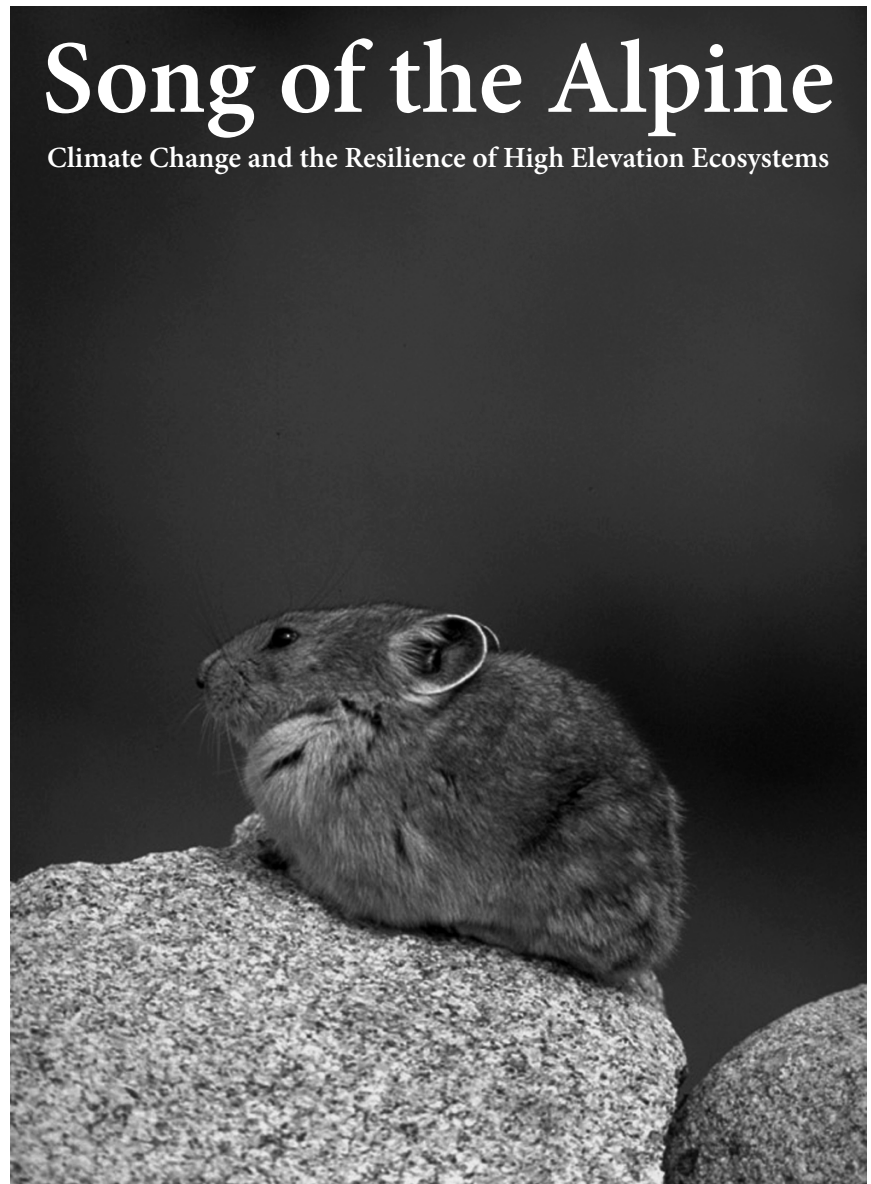
11:45 - 12:15 *Climate and the American Pika
Dr. Chris Ray*

12:15 - 1:15 Complimentary Lunch

1:15 - 1:45 *Mountains as Early Warning Indicators of Climate Change
Dr. Mark Williams*

1:45 - 2:15 *Snow is Water and Water is Life
Long-Term Trends in Snow Accumulation and Melt in Wild Basin, RMNP
Glenn Patterson*

2:15 *Closing Remarks by Dr. Jeff Mitton*



Song of the Alpine

Climate Change and the Resilience of High Elevation Ecosystems

20th Annual Boulder County Ecosystem Symposium
Saturday, March 16, 2013
University of Colorado, Ramaley Auditorium

Speakers

Cal Whitehall, Maddie Estin, and Jim and Kathy Snow will present a tribute to Joyce Gellhorn. Joyce, a teacher and author, was passionate about natural history, environmental preservation, and education. Her intense love affair with the natural world coupled with forward-looking optimism and physical resolve inspired her to conduct groundbreaking research, write poetic books, and introduce several thousand students, age 5 to 85, to field ecology. Many will remember that upon finding an orchid, aspen grove or her beloved ptarmigan, Joyce would say, "This is a good day in the office."

Dr. Bill Bowman is Director of the Mountain Research Station, Institute of Arctic and Alpine Research, and Professor at CU-Boulder's Department of Ecology and Evolutionary Biology. Disruption of the composition of plants, animals, and microorganisms due to environmental changes portend the alteration of ecological processes that will have long-lasting impacts. Anthropogenic nitrogen inputs can cause relatively irreversible biological and geochemical changes in alpine ecosystems, including loss of diversity and acidification of soils and surface waters.

Scott Ferrenberg is a PhD student working with Jeff Mitton in CU's Department of Ecology and Evolutionary Biology. He has studied bark beetle-conifer interactions and forest fires. His recent research found a pattern of tree resin volume and chemistry along an elevational transect, suggesting a gradient of selection on tree defenses—possibly due to bark beetle activity. Regardless of the processes behind this pattern, weaker defenses in high elevation trees could promote future bark beetle epidemics in subalpine forests as global temperature continues to rise.

Tommy Detmer is a Ph.D. candidate in the Ecology and Evolutionary Biology program at CU- Boulder. His primary research interest is in how fish introductions in high elevation lakes affect aquatic insects and zooplankton communities and how these changes relate to changes in biogeochemical cycling. Most high elevation lakes were fishless prior to European settlement. Without a clear understanding of the effects of fish introductions on historically fishless lakes, it's impossible to weigh the benefits of fish stocking against the negative effects on other components of lake food webs and related ecosystems.

Dr. Chris Ray is a researcher with the Department of Ecology and Evolutionary Biology, focusing on the analysis of patterns in population dynamics of many species of plants and animals, particularly the American pika. Many species— especially alpine species— are expected to be sensitive to climate change, but many also have ways to adapt. Will the "cold-adapted" pika succumb to global warming, or does its use of favorable microclimates place it among the less vulnerable species? This question motivates much recent research, summarized in this talk.

Dr. Mark Williams is a Fellow at the Institute of Arctic and Alpine Research (INSTAAR) and Professor of Geography at the University of Colorado. Mountains, especially alpine ecosystems, are early warning indicators of perturbations such as climate change. Mark will evaluate the glacial retreat of the Hindu Kush-Himalaya region, the extent to which snow accumulation explains plant production in the Sierra Nevadas and how hydrologic connectivity may be altered by climate change here in the Rocky Mountains.

Glenn Patterson is a Ph.D. candidate specializing in snow hydrology at Colorado State University and has worked as a hydrologist for the U.S.G.S. for 30 years. The amount and timing of snow accumulation and melt determine the quality of winter habitat and cover for high elevation plants and subnivean animals as well as the magnitude and timing of streamflow and groundwater recharge. Data from Rocky Mountain National Park's Wild Basin are evaluated to determine spatial and temporal trends in snow accumulation and melt during the period of observed record, 1936-2012.

Dr. Jeff Mitton is a Professor and former chair of CU-Boulder's Department of Ecology and Evolutionary Biology. His primary research interests focus on the evolutionary forces that influence genetic variation within and among populations. Jeff has been a long-time sponsor of the Boulder County Ecosystemposium and will once again moderate our program today.

Sponsored by

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