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Clifford Adamchak	Beaver Ponds: Methylmercury Production and Export in the Western U.S	Other	Biogeochemistry; Hydrology	The western United States (U.S.) is experiencing severe drought conditions exacerbated by climate change. As annual precipitation and runoff generation decline, American beaver (Castor canadensis) populations are increasing, in part due to reintroduction
Katie Adler	Evaluating mechanisms underlying disturbance-related demographic change	Ecology and Evolutionary biology	Animal Behavior; Long-term research	Human development is expanding rapidly into wildlands to keep up with exponential population growth, forcing wildlife to either emigrate or adapt to increased disturbance. Species that adapt often exhibit behavioral changes that can have subsequent survi
Ruben Alarcon	Impacts of dandelions (Taraxacum officinale) on plant-pollinator networks		Community ecology; Food web biology; Insect biology; Pollination	The purpose of this project is to document how non-native dandelions (Taraxacum officinale) affect plant-pollinator communities near RMBL. Jones (2004) tested if dandelions compete for pollinators with Delphinium nuttallianum, by removing dandelion flow
Fatima Alcantara	Pollen limitation in an insect-pollinated, masting perennial	Ecology and Evolutionary biology	Phenology; Plant biology; Pollination	Masting is a dramatic example of plant reproduction, creating incredible boom and bust patterns of fruits, seeds, or flowers across years and over large spatial areas, including and up to entire continents. In some years, individuals reproduce in great a
Jill Anderson	Interactive effects of biotic and abiotic conditions on local adaptation	Ecology and Evolutionary biology	Climate change; Genetics; Phenology; Plant biology; Species Interactions	Climate change is imposing novel selection, disrupting local adaptation, shifting geographic distributions, and altering species composition and diversity of ecological communities. Accordingly, climate change acts directly on species through new abiotic
Jordan Argrett	Are hemiparasitic plants the "Robinhood" of sub-alpine communities?	Ecology and Evolutionary biology	Community ecology; Plant biology; Soil/microbial ecology	Root hemiparasitic plants are found in almost every ecosystem and can profoundly affect surrounding plants in the community. These organisms use unique belowground structures to attach to host plants and extract nutrients and water but maintain the abili

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Kaysee Arrowsmith	Drivers of pollinator niche variation	Ecology and Evolutionary biology	Climate change; Pollination; Species Interactions	In this project, I propose to examine how interactions between plants and their insect pollinators vary among individuals and populations of pollinators. I will examine the variety of flowers visited by individual pollinators that belong to multiple spec
Holly Barnard	Quantifying controls of dynamic storage on critical zone processes		Biogeochemistry; Climate change; Geology; Hydrology; Modeling	The critical zone is a thin layer at the Earth's surface where rock, soil, water, air, and living organisms interact. The critical zone supports life on Earth. In the western United States, the critical zone is sensitive to changes in the environment, su
Thibaut Barra	Individual variation in predictability, its evolutionary consequences.	Ecology and Evolutionary biology	Animal Behavior; Long-term research	Understanding the processes underlying biodiversity is a real challenge, especially with the major biological crisis we are facing. To comprehend how and why living beings diversify, studying phenotypic variation among individuals is essential. Two level
Taylor Bastian	Socially-driven fitness consequences of environmental variation	Ecology and Evolutionary biology	Animal Behavior; Climate change; Long-term research; Modeling	In recent years, anthropogenically-driven climate change has significantly altered environmental conditions. These changes have caused changes in the traits of many organisms, including social behavior; this is important because social behavior impacts a
Parker Bausman	N. hostilis effects on timing, amount and distance of subsidy exports	Ecology and Evolutionary biology	Aquatic Biology; Climate change; Community ecology; Food web biology; Insect biology; Landscape biology; Species Interactions	Emergent aquatic insects can be a large source of nutrients that are transported from aquatic to terrestrial environments. Many terrestrial organisms such as birds, spiders, and invertebrates rely on these pulsed allochthonous resources. However, nutrien
Max Berkelhammer	Topographic controls on transpiration in the East River watershed	Hydrology	Atmospheric Science; Biogeochemistry; Climate change; Hydrology; Modeling	Transpiration is the upwards flow of water from soil to atmosphere by vegetation. This flux of water is a critical component of the photosynthetic process and an important control on the energy balance of leaves. The spatial and temporal patterns in tra

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Amrita Bhattacharyya	Anoxic microsites control methanogenesis at terrestrial-aquatic interfaces	Earth Systems Science	Biogeochemistry; Climate change; Geology; Hydrology; Microbiology	Anaerobic microsites, a defining feature of soil redox heterogeneity, are zones of oxygen depletion in otherwise oxic environments. Subsequently, anaerobic microsites can serve as hot spots for biogeochemical (BGC) processes, generating and exporting red
Benjamin Blonder	Plant community dynamics in a changing environment	Ecology and Evolutionary biology	Climate change; Community ecology; Genetics; Landscape biology; Long-term research; Modeling; Plant biology; Species Interactions	Predicting the responses of species to environmental change is a key goal for community ecology, especially in applied management and restoration contexts. My research focuses on this general challenge in two complementary contexts: alpine plant communit
Dan Blumstein	Vertebrate antipredator and communication studies		Animal Behavior; Vertebrate biology; Other	Since 2001, I have had an approved UCLA protocol to study antipredator behavior and communication in free-living birds by employing simple experiments. Many of these projects have been designed to study questions associated with wildlife conservation and
Dan Blumstein	The marmots of RMBL		Animal Behavior; Climate change; Disease ecology; Genetics; Long-term research; Microbiomes; Modeling; Phenology; Vertebrate biology	The study of yellow-bellied marmots at the RMBL is the third-longest study of free-living, individually-marked mammals in the world. Over the next five years we aim to continue to collect demographic, genetic/genomic, behavioral, and endocrinological dat
Carol Boggs	Drought response as escape from apparent maladaptation	Ecology and Evolutionary biology	Animal Behavior; Climate change; Community ecology; Genetics; Insect biology; Landscape biology; Plant biology; Species Interactions	The native butterfly Pieris macdunnoughii lays eggs on a non-native, invasive mustard, Thlaspi arvense. The larvae won't eat the plant. This reflects maladaptation on the part of the butterfly to the plant. This maladaptation has persisted for over

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Carol Boggs	Soulé Butterfly Re-survey		Climate change; Insect biology; Long-term research; Phenology	This project exploits a butterfly monitoring data set collected by Michael Soulé and his Earthwatch teams from 1982-1991. He collected data on the number of butterflies of specified species seen every 3 days along the Copper Creek trail from RMBL to the
Janelle Bohey	Effect of drought on floral scent and plant-pollinator interactions	Ecology and Evolutionary biology	Climate change; Community ecology; Phenology; Plant biology; Pollination; Species Interactions	Plant-pollinator interactions are important for biodiversity and supporting healthy ecosystems. With climate change posing a threat to floral traits that attract pollinators, our focus extends to the often-overlooked olfactory signals and stimuli. Floral
Ian Breckheimer	The Spatial Ecology of Environmental Change in the Upper Gunnison Watershed	Ecology and Evolutionary biology	Atmospheric Science; Climate change; Community ecology; Hydrology; Landscape biology; Modeling; Phenology; Plant biology; Pollination; Snow Science	In response to accelerating climate change and other anthropogenic impacts, mountain ecosystems are rapidly shifting in both structure and function, leaving the systems themselves and the services they provide at significant risk of disruption. Despite t
Alison Brody	Effects of herbivory on life-history and long-term demography.	Ecology and Evolutionary biology	Long-term research; Plant biology; Species Interactions	The effects of herbivore damage on plant reproductive success are most often assessed by counting fruit and seed production over a few years. Long-term, demographic data sets can be extraordinarily useful in elucidating patterns that cannot be revealed
Berry Brosi	Pollination Network Structure, Function, and Response to Perturbation		Animal Behavior; Climate change; Community ecology; Genetics; Insect biology; Modeling; Phenology; Plant biology; Pollination; Species Interactions; Theory	This renewal research application covers three distinct but related projects, all focused on pollination networks, their responses to perturbation, and the relationship between their structure and function. The first project, “Quantitative Network Struc

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Diane Campbell	Long-term studies of plant evolution and demography	Biology	Climate change; Long-term research; Plant biology; Pollination	
Paul CaraDonna	Long-term monitoring of bee-plant interactions	Ecology and Evolutionary biology	Animal Behavior; Climate change; Community ecology; Food web biology; Insect biology; Long-term research; Modeling; Phenology; Plant biology; Pollination; Species Interactions	Our primary research project is an ongoing long-term (8-year) monitoring of wild pollinator populations, floral resources, plant-pollinator interactions, and local climate. Since 2015, we have extensively monitored the abundance and activity of wild bumb
Mariah Carbone	Response of plant and microbial respiration to changing cold season climate	Earth Systems Science	Biogeochemistry; Climate change; Climate science; Phenology; Soil/microbial ecology	Winter is changing in the western US mountains. There is less snowfall, snow is melting earlier in the spring, and the warm summers are becoming longer. These changes in winter and water availability impact forests. Belowground in the forest soil, microo
Lauren Carley	Joint fates of genetic variation and demography under changing climates	Ecology and Evolutionary biology	Genetics; Long-term research; Modeling; Plant biology; Species Interactions; Other	In a changing climate, a central research goal is to understand whether and how wild populations will persist despite rapid shifts in environmental drivers like precipitation and temperature. As such, many researchers aim to monitor population dynamics a
Aimee Classen	Warming and Species interactions	Ecology and Evolutionary biology	Biogeochemistry; Climate change; Community ecology; Food web biology; Long-term research; Microbiomes; Microbiology; Modeling; Phenology; Plant biology; Soil/microbial ecology; Species Interactions	

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Samantha Day	Conflicting Selection on Flower Size in Iris missouriensis		Climate change; Genetics; Plant biology; Pollination	Animal pollinators play a significant role in the reproduction of flowering plants. These pollinators can act as strong agents of selection on various floral traits such as flower size. While pollinators are known to impose selection, other factors such
Lee "Mick" Demi	Chronic Ndeposition and Didymosphenia geminata blooms	Ecology and Evolutionary biology	Aquatic Biology	Nuisance blooms of the algae Didymosphenia geminata have become increasingly common and widespread over vast portions of its native range over the last several decades. However, unlike most algal blooms, blooms of this species of stalk-producing diatom a
Sabine Dritz	The functional response of Bombus sp. in multi-resource environments.	Ecology and Evolutionary biology	Community ecology; Modeling; Pollination; Species Interactions; Theory	Phenology shifts among plants and their pollinators are producing novel species assemblages at the Rocky Mountain Biological Laboratory (RMBL). To address the resulting impact on pollination services, it is necessary to know how pollinator visitation rat
Laurent Duverglas	The effects of tri-trophic interactions on insect population dynamics	Ecology and Evolutionary biology	Insect biology; Species Interactions	I will investigate the relative effects of various biotic interactions (e.g., predation, intraguild predation, parasitism) on the introduced population of Gillette's Checkerspot (Euphydryas gillettii) at Gothic, Colorado. Knowledge of the relative magnit
Bret Elderd	General Observations of Plant-Lichen and Plant-Herbivore Interactions	Ecology and Evolutionary biology	Community ecology; Species Interactions	We wish to conduct a series of surveys/observations in the US Forest Service's Gunnison District and at RMBL examining plant and insect populations along with plant-lichen interactions. Our general research interests focus on insect host-pathogen interac

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Brian Enquist	Assessing drivers of vegetation functional change	Biology	Climate change; Community ecology; Hydrology; Long-term research; Modeling; Plant biology; Soil/microbial ecology; Snow Science; Species Interactions; Theory	We use physiological, experimental, theoretical, and observational methods to try to understand what regulates diversity (phylogenetic and functional) and dynamics of subalpine communities and ecosystems at different scales. In particular, we are interes
Jacquelyn Fitzgerald	Bumble bee thermal tolerance, climate variation, and population trends	Ecology and Evolutionary biology	Climate change; Insect biology; Pollination	All living things are bounded by temperature. Too hot, and biological functions start to breakdown, like a car overheating. Too cold, and life hits pause, like a computer freezing. Different species have different temperature limits, depending on where t
Jessica Forrest	Population ecology and evolutionary biology of solitary bees	Ecology and Evolutionary biology	Animal Behavior; Climate change; Insect biology; Long-term research; Phenology; Pollination; Species Interactions	Population ecology and evolutionary biology of solitary bees in the context of climate change
Elsa Godtfredsen	Impacts of Early Snowmelt on Subalpine Plant Reproduction and Survival	Ecology and Evolutionary biology	Climate change; Phenology; Plant biology; Pollination; Species Interactions	Snowmelt is a vital spring water source and also cues the phenology (life cycle event timing) of subalpine plants. Climate change is causing snowmelt to happen earlier in the spring and precipitation to become more variable, which can affect plant-pollin
Hamish Greig	Long-term research on the ecology of ponds in a changing climate	Ecology and Evolutionary biology	Animal Behavior; Aquatic Biology; Climate change; Community ecology; Food web biology; Insect biology; Long-term research; Species Interactions	High elevation wetlands harbor unique biodiversity, are important components of Rocky Mountain water systems, and are subject to accelerating rates of environmental change. This application summarizes the next 5 years of long-term research by co-PIs Hami

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Josh Grinath	Long-term effects of nitrogen deposition and bears in ecological networks	Ecology and Evolutionary biology	Animal Behavior; Atmospheric Science; Community ecology; Food web biology; Insect biology; Long-term research; Plant biology; Soil/microbial ecology; Species Interactions; Vertebrate biology	Human activities have doubled the amount of biologically-available nitrogen on Earth, much of which is emitted to the atmosphere and falls to the ground far from its source. This blanket of fertilizer, called ‘atmospheric nitrogen deposition, has well-st
Anna Grinath	Authoring disciplinary identities in a community of science practice		Other	The purpose of this research is to understand how people learn to do scientific research while participating in research groups and communities of research groups. A community of practice is a "group of people who share a concern or a passion for so
John Harte	Vegetation Recovery after Termination of Heating	Ecology and Evolutionary biology	Atmospheric Science; Climate change; Community ecology; Long-term research; Modeling; Plant biology; Theory	Much research at RMBL and elsewhere has focused on the effects of climate warming on plant communities. Less studied is how these communities will recover upon termination of heating. Although society is unlikely to actually reduce atmospheric greenhous
Jacob Heiling	Floral volitile ecology of Lupinus argenteus	Ecology and Evolutionary biology		Like color and shape, floral scent helps plants communicate with animals. But attraction via scent is not limited to pollinators, scent can also attract herbivores and, potentially, the natural enemies of these herbivores. Likewise, even while attracting
Amy Iler	Consequences of phenological shifts and pollination for plant populations		Climate change; Community ecology; Long-term research; Phenology; Plant biology; Pollination; Species Interactions	Non-technical Abstract (Project 1): Climate change is predicted to decrease biodiversity by increasing the extinction risk of many species, but there are very few examples of climate change actually leading to population declines, because this is a chall

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David Inouye	Long-term study of wildflowers	Ecology and Evolutionary biology	Climate change; Community ecology; Long-term research; Phenology; Plant biology; Pollination; Species Interactions; Vertebrate biology	Long-term study of flowering abundance and phenology, plant demography, and other intriguing questions about montane species. Abstract This research focuses on understanding variation in timing and abundance of flowering in sub-alpine wildflower commu
Brian Inouye	Underwood-Inouye long-term phenology	Ecology and Evolutionary biology	Climate change; Insect biology; Phenology; Plant biology; Species Interactions	The long-term phenology project tracks the flowering phenology (timing within season) for ~130 plant species in 35 permanent plots in the RMBL area. This dataset shows evidence of climate change advancing the flowering times of most species.
David Inouye	Supplement Collection of fecal material from hummingbirds	Ecology and Evolutionary biology	Food web biology; Vertebrate biology	Hummingbirds will be placed in a small cage for up to 10 minutes and fecal samples will be collected on filter paper on the cage bottom.
David Inouye	Supplement Estimate of resident deer population size in Gothic	Ecology and Evolutionary biology	Animal Behavior; Vertebrate biology	I propose to conduct a mark/resight project to estimate the resident deer population in Gothic.
Rebecca Irwin	Effect of climate variability on bee phenology and abundance	Ecology and Evolutionary biology	Animal Behavior; Climate change; Community ecology; Insect biology; Long-term research; Phenology; Plant biology; Pollination; Species Interactions	My five-year research plan is split across five projects. (Projects 1 and 2) Assessing how climate variability affects bee phenology and abundance and the mechanisms involved. We will add to a 10-year dataset that is addressing how climate and flowering
Juliana Jiranek	Evolution and epidemiology in plant–pathogen systems under climate change	Ecology and Evolutionary biology	Climate change; Disease ecology; Genetics; Long-term research; Modeling; Phenology; Plant biology; Theory	Environmental context plays a large role in the transmission and evolution of infectious diseases. As a result, climate change will cause large perturbations to host–pathogen systems. Although the potential impacts of cl

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Stephanie Kampf	Stream Tracker: Documenting flow duration on non-perennial streams	Hydrology		This project will expand an existing program, Stream Tracker, into the Upper Gunnison River Basin. Stream Tracker aims to expand monitoring on non-perennial streams through both sensors and crowd-sourcing. We will establish stream sensors in non-perennia
Melanie Kazenel	Effects of microclimate heterogeneity on plant-pollinator interactions	Ecology and Evolutionary biology	Climate change; Community ecology; Insect biology; Landscape biology; Phenology; Plant biology; Pollination; Species Interactions	Among factors hypothesized to play a role in maintaining insect pollinator diversity, small-scale environmental heterogeneity may be particularly important, but has been relatively little-studied. To fill this gap, we propose to compare plant, pollinator
Chloe Keck	Integrating resource allocation, vision, and fitness in Speyeria mormonia	Biology	Animal Behavior; Community ecology; Insect biology	Using the Mormon fritillary (Speyeria mormonia) butterfly as a study system, I will study the adult morphology and reproductive behavior of adults in the field, while also examining how these traits are affected by larval dietary stress in th
Gwen Kirschke	Tracking Bumble Bee Movement Patterns in Subalpine Meadows	Ecology and Evolutionary biology	Animal Behavior; Community ecology; Insect biology; Landscape biology; Pollination	It is helpful to know how pollinators move around the landscape, because it can allow us to learn things about their natural history, foraging behavior, and navigation strategies. For example, it can help us address questions such as: Where do bees nest?
Stephanie Kivlin	Decoupling plant and mycorrhizal fungal phenology in the Anthropocene		Biogeochemistry; Climate change; Community ecology; Microbiomes; Modeling; Phenology; Soil/microbial ecology; Snow Science; Species Interactions	Plants do not live in isolation. Instead, they associate with multitudes of organisms, including mycorrhizal fungi belowground. These fungi acquire most plant nutrients and water in exchange for sugar. However, interactions between plants and mycorrhizal

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Kyla Knauf	Wildflower Reproduction Phenology and Seed Traits under Early Snowmelt	Biology	Phenology; Plant biology	As snow melts earlier in the spring due to climate change, it has the potential to cause shifts in flowering time, especially for spring wildflowers. However, research on this topic often focuses solely on flowering time, with little regard for subsequen
Lara Kueppers	Climate effects on forest structure, dynamics and hydrologic function	Earth Systems Science	Climate change; Landscape biology; Long-term research; Modeling; Plant biology	
Lara Kueppers	GLORIA@RMBL	Ecology and Evolutionary biology	Climate change; Community ecology; Landscape biology; Long-term research	
Isaac Larsen	Abiotic and biotic controls on chemical weathering rates and solute generation	Earth Systems Science	Climate science; Geology; Hydrology	Abiotic and biotic controls on chemical weathering rates and solute generation Precipitation is subject to a variety of bio-physical transformations before leaving watersheds as streamflow. One key transformation is chemical weathering, which is driven
Corey Lawrence	Regional Assessment of Drought Impacts on Soils	Earth Systems Science	Biogeochemistry; Climate change; Geology; Long-term research; Modeling; Phenology; Plant biology; Soil/microbial ecology	Regional Assessment of Drought Impacts on Soils: Development of an integrated soil functional mapping framework. Soils serve critical roles in most terrestrial ecosystems. In particular, the accumulation of soil organic matter is an important function su
Heron Lenz	Species Traits Influence Response of Ant-Aphid Mutualism to Thermal Changes	Biology	Animal Behavior; Climate change; Community ecology; Insect biology; Modeling; Species Interactions	Studying changes in species interactions allows us to better predict and plan for future global change. In this study system, aphids feed on the host plant, Ligusticum poteri. Ants harvest the honeydew excreted by the aphids, and in return, protect the a
Li Li	Water at Coal Creek	Earth Systems Science	Biogeochemistry; Climate change; Geology; Hydrology; Modeling; Snow Science; Theory	

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Jessica Lundquist	Seasonal Cycles Unravel Mysteries of Missing Mountain Water	Hydrology	Atmospheric Science; Biogeochemistry; Climate change; Climate science; Hydrology; Meteorology; Microbiomes; Modeling; Snow Science	Snow provides over 60% of water supplies in the Western United States, and in general, spring snow measurements provide a good prediction of summer streamflow. However, in some years, these streamflow predictions are not accurate, and water managers str
Patrick Magee	Ecology of wintering mammals int he Rocky Mountains	Other	Vertebrate biology	Western Colorado University Mammalogy Class Ecology of wintering mammals in the Rocky Mountains The class will involve natural history and winter ecology with focus on mammals and the physics of snow. To explore life histories of mammals we will “hike”
Max Mallen-Cooper	Thresholds and tipping points in ecosystem responses to global warming	Ecology and Evolutionary biology	Biogeochemistry; Climate change; Community ecology; Species Interactions	Climate change is currently modifying the myriad linkages between soils, plants, animals and the atmosphere. Being able to predict these changes in advance allows us to conserve key components of natural environments and, more practically, preserve the v
Audrey Miller	Receiver roles in hummingbird courtship	Ecology and Evolutionary biology	Animal Behavior; Other	Animal signals are often complex and dynamic; signalers can combine color, pattern, sound, and motion to communicate information for a variety of purposes. Receivers also have an important impact on signal design and evolution. Their perceptual capabilit
Kailen Mooney	Plant-Herbivore Interactions Along Elevational Gradients		Animal Behavior; Climate change; Community ecology; Food web biology; Insect biology; Plant biology; Species Interactions; Theory	Insects feeding affects plant growth and has driven plants to evolve and invest in costly defenses. The evolutionary ecology of plant-herbivore interactions has important implications for understanding both natural ecosystems and for the agricultural s

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Emily Mooney	Insects on Ligusticum	Ecology and Evolutionary biology	Climate change; Insect biology; Phenology; Snow Science	Plants are consumed by a variety of insect herbivores. These herbivores vary in abundance from place to place and over time. The purpose of this project is to monitor the abundance and phenology of insects and other arthropods on the focal plant Ligustic
Jocelyn Navarro	Using a turf transplant experiment to study plant functional traits	Atmospheric Science	Climate change; Community ecology; Hydrology; Plant biology	Long Title of Project: Assessing plant functional traits and community response to climate change in the Rocky Mountains using a turf transplant experiment Non-technical Abstract: The goal of this study is to learn how plant water relation traits will
Nhan Nguyen	dispersal choice of female golden-mantled ground squirrels	Ecology and Evolutionary biology	Animal Behavior; Long-term research; Vertebrate biology	Natal dispersal, the movement of individuals from birthplace to breeding site where they find mates, is crucial to understand because it plays a major role in population demography, genetic diversity, social structure, and distribution of individuals. To
Bobbi Peckarsky	Integrating stream research, teaching and outreach	Biology	Aquatic Biology; Climate change; Community ecology; Insect biology; Long-term research	Integrating stream research, teaching and outreach to inform advocacy by conservation organizations and influence policy makers
William Petry	Forecasting population dynamics in changing environments	Ecology and Evolutionary biology	Climate change; Long-term research; Modeling; Plant biology; Theory	Effectively responding to rapid global change will require precise, accurate predictions of how ecological systems will respond. However, our current methods for modeling the performance of individuals, populations, and species are optimized to explai
Sam Pierce	Beaver dam influence on floodplain hydro-biogeochemistry	Earth Systems Science	Biogeochemistry; Hydrology	This research investigates the ecological impact of beaver dam analogs (BDAs) on gravel bed river floodplains, focusing on Trail Creek in Gunnison County, Colorado. Historically, there were significant reductions in North American beaver populations, alt
Mark Raleigh	Snow process studies in the East River Basin		Snow Science	

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Evan Ramos	Clay formation and organic matter stabilization across an alpine watershed	Earth Systems Science	Biogeochemistry; Climate change; Geology; Hydrology; Soil/microbial ecology	Soil organic carbon (OC) constitutes the largest terrestrial pool of carbon, and changes in its size have the potential to modulate atmospheric CO2 levels. As such, the underlying controls on OC stabilization and their sensitivities to climatic change ha
Kelsey Reider	Context-Dependent Life History Responses to Climate Change		Aquatic Biology; Climate change; Phenology; Vertebrate biology	Larval salamanders either metamorphose into terrestrial adults (metamorphs) or forego metamorphosis to become gilled, aquatic adults (paedomorphs). Paedomorphs are primarily subject to environmental changes in the aquatic habitat whereas metamorphs are s
Timberley Roane	Microbial Genomics Analysis of the Mt. Emmons Acidic, Metal-Impacted Fen	Biology	Microbiology	The Mt. Emmons Fen is a unique acidic, naturally metal-impacted wetland system in the Crested Butte area. Sensitive to environmental changes, the Fen provides opportunity to examine how microorganisms, such as the bacteria, can be used as early sentinel
Robert Schaeffer	Context-dependent effects of nectar microbes on pollination mutualisms	Ecology and Evolutionary biology	Animal Behavior; Community ecology; Insect biology; Microbiomes; Microbiology; Plant biology; Pollination; Soil/microbial ecology; Species Interactions	Interactions among plants, pollinators, and nectar robbers have long served as an important model system for exploring ecological shifts between states of cooperation and conflict. Yet, despite their extensive study, the mechanisms that
Alden Sears	How interactions with mutualists & predators shape plant coexistence	Ecology and Evolutionary biology	Community ecology; Plant biology; Pollination; Species Interactions; Theory	Plant community structure is controlled by interactions between individuals that are mediated by shared resources, mutualists, and enemies. It is difficult to study each of these three classes of interactions in parallel due to their great complexity. We

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Austin Simonpietri	Ecohydrologic Controls of Sub-Alpine Forest Soil Respiration	Earth Systems Science	Biogeochemistry; Climate change; Long-term research; Microbiology; Phenology; Plant biology; Soil/microbial ecology; Snow Science	NON-TECHNICAL ABSTRACT: Mountainous ecosystems are currently experiencing a lot of change in their water inputs. With the dominant water source, snowpack, decreasing and melting earlier. This change in the primary water source not only influences the ab
Rosemary Smith	Behavioral Ecology of Burying Beetles	Ecology and Evolutionary biology	Animal Behavior; Biogeochemistry; Climate change; Community ecology; Food web biology; Insect biology; Long-term research; Phenology; Soil/microbial ecology; Species Interactions; Vertebrate biology	Behavior and Ecology of Burying Beetles and their Small Mammal resource. Studies of the impacts of human recreation on wildlife. I have a long-term research project on the behaviors and population dynamics of the burying beetle Nicrophorus investigator
Lara Souza	Physiological drivers of plant community and ecosystem processes	Ecology and Evolutionary biology	Climate change; Community ecology	
Matthias Sprenger	LateSt-Iso: Ecohydrology via high-frequency stable isotope measurements	Hydrology	Hydrology	There is a need to better understand how mountain vegetation uses water to better predict both forest health and downstream water availability in a more drought-prone future. We use state-of-the-art high frequency stable isotope measurements to identify
Jeannie Stamberger	Long-term, high-resolution ground temperature study of Colias meadii habitats	Biology	Climate change; Insect biology; Long-term research; Modeling	
Heidi Steltzer	Vegetation's influence on mountain watershed function	Atmospheric Science		Vegetation's influence on mountain watershed function: Mountain systems provide refuge to species, and people, which has led an abundance of plant species in and unique to mountain regions. They are also essential for the well-being of people in and

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Kristina Stinson	Ecology and impacts of non-native mustards in the subalpine zone		Climate change; Insect biology; Microbiomes; Phenology; Plant biology	Plants in the Brassicaceae (mustard) family are of broad interest to biologists. Phytochemical compounds unique to the Brassicaceae (i.e., glucosinolates) include secondary compounds that deter generalists, attract specialist insect herbivores, and deter
Mary (Cassie) Stoddard	Mechanisms of color vision in hummingbirds	Ecology and Evolutionary biology	Animal Behavior; Climate science; Community ecology; Pollination; Species Interactions; Vertebrate biology	
Blair Stokes	Natural variation of fructose-1,6-bisphosphatase and larval development	Biology	Genetics; Insect biology	I am interested in how the environment affects organism development through natural genetic variation of metabolic processes. I am proposing a study using Colias butterflies to look at how microclimate difference influence the natural genetic variation o
Harry Stone	Modeling Drivers of Summer Streamflow Changes at the Micro-catchment Scale	Hydrology	Climate change; Hydrology; Snow Science	Mountainous watersheds, such as the Colorado River Basin, are key sources for a diversity of human needs and are under threat from climate change. The Colorado has seen a precipitous drop in river flows, endangering the water supply of 1 in 10 Americans.
Brad Taylor	Linking changing snowpack to stream ecosystem structure and function	Ecology and Evolutionary biology	Aquatic Biology; Biogeochemistry; Climate change; Community ecology; Disease ecology; Food web biology; Hydrology; Long-term research; Species Interactions	

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Zachary Taylor	Paleoenvironmental reconstruction in the Gunnison Basin from sediments	Geology	Biogeochemistry; Climate change; Climate science	Lake and fen sediments are rich archives of information about past environments. Near RMBL, these sediments have the potential to reach back 18,000 years to the Last Glacial Maximum. Through the analysis of pollen grains, charcoal fragments, and sedime
Stavi Tennenbaum	Epigenetic variation & accelerated aging in the seasonal habitat of marmots	Ecology and Evolutionary biology	Climate change; Genetics; Long-term research; Phenology; Vertebrate biology	Aging is a universal consequence of life, yet this cost is experienced differently between species and potentially between different populations. Long-term studies in wild mammals have shown that lifespa
James Thomson	Glacier Lily Demography		Plant biology; Pollination	
Olivia Vought	The Impact of Climate Change on Ecosystem Structure and Function	Ecology and Evolutionary biology	Climate change; Community ecology; Microbiology; Phenology; Plant biology; Soil/microbial ecology; Snow Science; Species Interactions	I will be doing research in the WaRM (Warming and Removal in Mountains) project and the DOE-funded snowmelt manipulation to study the effects of climate change on ecosystem function. Last summer in the WaRM plots, I found that warmer temperatures reduced
Maggie Wagner	Boechera stricta microbiome evolution II	Ecology and Evolutionary biology	Climate change; Genetics; Microbiomes; Plant biology; Soil/microbial ecology	The microbes living on and inside plant organs (the microbiome) can greatly impact the health and growth of the host plant. However, despite recent research into the processes and mechanisms behind these relationships, there is still much to learn about
Haruko Wainwright	Multiscale Heterogeneity of Soil Moisture: Differential Drying	Hydrology	Climate science; Hydrology	
Susan Washko	Aquatic invertebrates and trout in beaver ponds of different ages	Ecology and Evolutionary biology	Community ecology; Food web biology; Insect biology; Vertebrate biology	Beavers are ecological engineers, creating a variety of habitats within aquatic ecosystems by constructing dams and ponds. As beaver ponds age, they accumulate sediment and become more wetland-like. This leads to ponds of different ages having different

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Ward Watt	Molecular evolution of Colias butterflies	Ecology and Evolutionary biology	Genetics; Insect biology	
Laura Watt	Continuing Archival Research of the Environmental History of RMBL	Other	Long-term research; Other	This project will continue conducting historical research at the Rocky Mountain Biological Laboratory (RMBL), a high-altitude biological field station located on the Western Slope of the Colorado Rockies. The Lab was built on the site of an old silver m
Ren Weinstock	Impacts of Climate Change on Bee Behavior across Socio-Ecological Contexts	Biology	Animal Behavior; Climate change; Genetics; Insect biology	In order to understand how climate change will impact bee populations, it is important to learn how increased temperature will alter bee behavior. This project will explore the impacts of heat stress on the behavioral mechanisms of two different bee popu
Caitlin Wells	Reproductive phenology in golden-mantled ground squirrels		Animal Behavior; Climate change; Genetics; Long-term research; Phenology; Vertebrate biology	Mammals living in high-altitude environments must time their reproduction carefully so that offspring are born when food is available. For hibernating squirrels, food does not become available in the spring until melting snow stimulates growth of green
Howard Whiteman	Evolutionary Ecology and Conservation Biology of Amphibians		Animal Behavior; Aquatic Biology; Climate change; Community ecology; Disease ecology; Food web biology; Long-term research; Modeling; Phenology; Species Interactions; Theory; Vertebrate biology	My proposed research focuses on how climate change is impacting Tiger Salamander populations through both observation and experimentation. Climate change is particularly strong at high elevations and potentially influential on the biology of amphibians.
Kenneth Whitney	Evolutionary Ecology of Floral Color	Ecology and Evolutionary biology	Plant biology; Pollination; Species Interactions	Flower color is central to plant-pollinator interactions, but several outstanding questions remain. How do floral colors vary geographically, i.e. across elevations or between habitats? What are the roles of abiotic agents (e.g. climate) and biotic age

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Kenneth Hurst Williams	Watershed Function SFA	Earth Systems Science	Biogeochemistry; Geology; Hydrology; Microbiomes; Microbiology; Modeling; Soil/microbial ecology; Snow Science	Berkeley Lab's DOE-funded Watershed Function Science Focus Area (SFA) seems to quantify how mountains retain and release water and solutes over annual to decidable timeframes in the face of both climate change and climate perturbation.
Rick Williams	Expanding Natural History and Community Science Resources at RMBL	Ecology and Evolutionary biology	Climate change; Community ecology; Genetics; Insect biology; Landscape biology; Long-term research; Phenology; Plant biology	Natural history collections and community science are increasingly recognized as important data sources for the study of global change biology. Natural history collections, such as herbaria, document changing diversity, distribution, phenology, morpholog
Matthew Winnick	Stream Corridor Hydrologic Controls on Carbon Dioxide Fluxes		Biogeochemistry; Hydrology; Modeling	Rivers and streams are increasingly recognized as important sources of greenhouse gases such as carbon dioxide (CO2) to the atmosphere; however, the full magnitude of emissions and the processes that control them remain highly uncertain. This project wil
Lydia Wong	Determinants of upper-elevation range limits in cavity-nesting bees	Ecology and Evolutionary biology	Climate change; Climate science; Community ecology; Insect biology; Phenology; Pollination	In recent decades, rapid warming has altered the environmental conditions experienced by many organisms. One ofthe most commonly documented biological responses to warming is range shifts, in which populations shift theirdistributions primarily towards h
Anne Worley	Geographic variation in floral shape and scent in Polemonium brandegeei	Ecology and Evolutionary biology	Plant biology; Pollination; Species Interactions	We are studying honey Jacob’s ladder (Polemonium brandegeei), a subalpine perennial plant with strongly scented, creamy flowers and skunky leaves. This species is visited by many pollinator groups, including hummingbirds, hawkmoths, and solitary bees. Va
Marshall Worsham	Soil moisture and growth responses to climate extremes in subalpine forests	Ecology and Evolutionary biology	Biogeochemistry; Climate change; Community ecology; Hydrology; Long-term research; Plant biology; Snow Science	The large objective of this project is to clarify the how environmental and community factors condition subalpine forest responses to climate extremes. Subalpine forests are outsize contributors to the hydrological budget of the Rocky Mountains, but they

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Megan Zerger	Assessing corticosterone and Bd infection in Ambystoma mavortium nebulosum	Ecology and Evolutionary biology	Aquatic Biology; Disease ecology	Amphibian biodiversity has greatly diminished in recent years due to disease. Panzootic pathogenic fungi Batrachochytrium dendrobatidis (Bd) causes the deadly disease chytridiomycosis (chytrid), a primary driver of catastrophic global amphibian declines