14JAN26
cahines

State of the Rockies Student Assistant Research Ecologist

All majors welcome. $15.16 an hour.

Intrigued by forest fires in the Rocky Mountain West? Interested in studying how western forests are responding to recent wildfires fueled by human-induced (i.e., land-use and resource extraction activities) climate change (e.g., warmer temperatures, decades of drought, and human manipulation of natural fire regimes)? Want to know if an iconic native western tree species, ponderosa pine (*Pinus ponderosa),* is successfully re-establishing (i.e., quantity; diverse age; stand structure) in these landscapes after more intense and more frequent fires? Want to learn about butterfly conservation? Microbiology? Mycology? Soils?

The **State of the Rockies Project** is HIRING student research ecology assistants to help test the scientific ecological concepts and theories of US western forest succession in this demographic study of Ponderosa pine forest establishment following fire in the Rocky Mountains of southern Colorado. Apply your coursework knowledge and build your research and writing skills, field science techniques, and quantitative analytical skills by helping to investigate and predict the "fate" of ancient Rocky Mountain West ponderosa pine forest ecosystems.

Project Description and Job Duties:

The re-establishment of a ponderosa pine forest: a multiple-scale twenty-year retrospect of The Waldo Canyon fire, Colorado
Scientists are concerned a Rocky Mountain dominant montane tree species, Ponderosa pine, will blink out in severely and extensively burned forest sites (Chang, 2021, Colorado State University). A hotter drier climate (i.e., changes in timing and amount of precipitation during the monsoon season, decrease in snowpack and duration – quicker and less (overall) runoff; quick deluge of snow melt; less available water) and the magnitude and intensity of the burn may have tipped the scale for this iconic species toward "extinction" in some parts of its range.

Working in collaboration with CC's State of the Rockies project, organismal biology and ecology department, IT/GIS department, and the art department, CC's **State of the Rockies Student Research Ecology Assistants** will help answer the questions: "What is the ecological condition of the Waldo Canyon burn area after twenty+ years? Do we see the expected patterns of forest succession in Ponderosa pine dominant forests?
What evidence can we find that may help us determine ecosystem function and health, (i.e., evidence of re-establishment (age diversity) of ponderosa pines; rich forest understory plant species; butterfly species presence/absence)? What processes might be driving patterns of revegetation? What predictions can be made about the long-term survival of these forests and butterflies? How have riparian zones responded?

What to expect:

Phase IV: Waldo Canyon upland montane Ponderosa pine forests 20 years later…

This is a year-long student employment position beginning spring of 2026 through spring of 2027. During Blocks 6-8 2023, students will review and discuss the literature on the natural history of the region and visit Aiken Canyon Preserve to observe the vegetation assemblage of the geologically and topographically similar landscape. We will meet weekly during blocks 6-7, explore the project GIS data and preliminary statistical analysis, finalize our hypothesis(es), and learn our research sampling design. As opportunities arise, we will consult with Colorado Springs city officials, Rocky Mountain Biological Lab, US Forest Service, National Parks Service (Rocky Mountain National Park), and visit these places and Colorado State University's natural history museum.

The Phase IV student research team will travel to Phase 1 and Phase 2 sites to collect and verify data collected in summer of 2023. Additional data collected in sites during Phase 3 that were not collected in earlier phases of the project will be collected in Phase 1 and Phase 2 sites (e.g., soil temperature; tree cores).

During the summer 2026 internship, students will travel by car to Waldo Canyon to collect and record field observations. The students will learn and implement field ecology sampling techniques (plot and distance sampling), learn and build GIS skills (i.e., mapping; space-time analyses), interact with scientists, city and government officials, museum curators, and begin an analysis of the data collected (e.g., evidence of re-establishment by stand demographics, presence absence of pollinator plants and butterfly species, soil microbes).

Questions we hope to answer:
What differences can we see among different burn sites in Waldo Canyon? Which sites seem more favorable to Ponderosa pine recovery? Why? Which sites offer favorable butterfly habitat? Why? What predictions and recommendations can we make about the future of these forests based on this study? Students will address these questions using preliminary findings from summer 2023 research. Preliminary research results will be used for further investigation during year two of the project.

This position begins Block 6 2026 and ends Spring 2027

Deadline to apply JANUARY 31, 2026 11:59 PM

Required application materials:
resume; cover letter; relevant coursework.

TIMELINE
Spring 2026
Begin literature review: natural history and ecology of Colorado Rocky Mountain montane forests and butterflies.
Field reconnaissance: Aiken and Waldo Canyons, Rocky Mountain National Park, RMBL
Visit CSU Natural History Museum: butterfly research
Gather extant GIS coverages; aerial and remotely-sensed data. Develop hypothesis(es) and sampling scheme
Identify field sites using GIS information and ground-trothing. Connect with Colorado Springs city officials, utilities, and fire departments

9 weeks Blocks 6-8 (5-10) hours per week

Summer 2026
Identify field sites and lay field transects Field data collection
GIS development Field data input
Field trip to Gothic, CO Rocky Mountain Biological Lab

This is a 10-week summer internship. Start date: June 5-Aug 10, 2023 (appx dates). 10-week summer intern * 37 hours per week

Fall 2026
9 weeks Blocks 1-3 (5-10) hours per week)
Continue field data input and begin statistical analysis Complete GIS coverages and begin analyses
Present work on student-led project in SCoRE conference October 2023.

Spring 2027
9 weeks Blocks 5-7 (5-10) hours per week)

Write report on research findings for digital magazine. Present work on student-led project in SCoRE conference October 2024. Write paper. Present work in State of the Rockies Conservation Data Viz Nite end-of-year celebration. Present at national and local conferences.

Preferred Qualifications:

- Adventurous spirit
- Natural sciences (e.g., biology; ecology, environmental science) coursework
- ArcGIS basic skills (Matt Cooney's ArcGIS Half-block class–ideal qualification)
- Excellent written and verbal communication; strong work ethic; ability to work on a team and independently
- Statistics - R Laba
- Interest in finding balance between human activity and the impact of human activity on the environment

Essential Duties: Field data collection, GIS analysis and statistical data analysis, academic writing.

Learning Competencies:

Career and Life Design

The ability to proactively manage your personal and professional growth throughout your life journey.

Communication
The ability to articulate thoughts and ideas clearly and effectively to exchange information, using a broad range of communication styles, appropriate platforms to deliver and receive messages, and effectively communicate to different audiences in a variety of situations.

Creative Thinking
The ability to engage dynamically with the unknown and willingness to reconsider existing problems or situations in new ways.

Critical Thinking
The ability to exercise sound reasoning to analyze information, make decisions, identify problems, and develop workable solutions.

Equity and Inclusion
The ability to demonstrate awareness, attitudes, knowledge, and skills required to equitably engage and include people from all identities and cultures. Engage in anti-racist practices that actively challenge the systems, structures, and policies of racism.

Leadership
The ability to recognize and leverage personal and the individual strengths of others to achieve common goals and use interpersonal skills to coach and develop others.

Manage Information
The ability to obtain, critically interpret, use, and communicate information, turning qualitative and quantitative data into knowledge.

Personal and Professional Effectiveness
The ability to demonstrate accountability to self and others through effective habits to be productive in work and life.

Teamwork
The ability to collaborate with others toward a shared goal, participating actively, and maximizing team performance.

Technology
The ability to select and leverage existing technologies and use them ethically to solve problems, complete tasks, and accomplish goals efficiently. Ability to identify, learn, and effectively use new and e

For more information visit **stateoftherockies.com** or contact Cyndy Hines chines@coloradocollege.edu