



# Colorado Natural Heritage Program

*Connecting Conservation and Science*



WARNER COLLEGE  
OF NATURAL RESOURCES  
COLORADO STATE UNIVERSITY

# THE COLORADO NATURAL HERITAGE PROGRAM

is a part of Colorado State University's Warner College of Natural Resources. Our mission is to facilitate conservation of Colorado's biodiversity. We collect, manage, and share detailed scientific information on rare and imperiled plants and animals, as well as rare and high quality ecosystems. Over more than three decades, CNHP's botanists, zoologists, ecologists, information managers, and conservation planners have built a database that houses over 11,500 mapped locations of rare plants, over 8,800 mapped locations of rare animals and over 5,000 mapped locations of unique plant communities. This information is a powerful tool for resource managers, land use planners, landowners, and other conservation partners. Read on to learn more about what CNHP can do for you!

## Biological Surveys



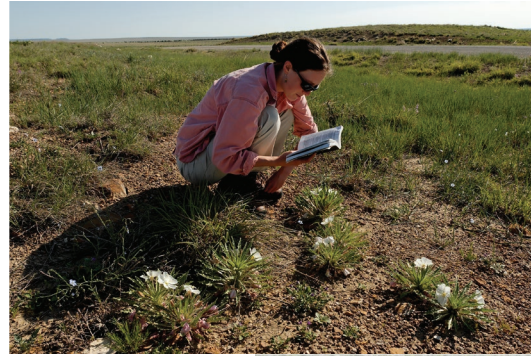
CNHP's biologists work throughout Colorado to identify and describe locations of rare animals, plants, and plant communities such as wetlands, grasslands, and forests. This work has been instrumental in some of Colorado's biggest conservation successes over the past 30 years. CNHP's biological surveys were the primary foundation for the establishment of Great Sand Dunes National Park and Preserve in the San Luis Valley, Red Mountain Open Space and Soapstone Prairie Natural Area in Larimer County, and many other protected lands.

## Wetlands

In partnership with the Environmental Protection Agency and Colorado Parks and Wildlife, CNHP has pioneered techniques for evaluating wetland condition across Colorado and throughout the Rocky Mountains. Wetland condition assessment tools include Floristic Quality Assessment, Vegetation Index of Biotic Integrity, and Ecological Integrity Assessment. These assessments will provide the first statistically defensible, landscape-scale estimate of wetland condition in major river basins in Colorado. We are also digitizing National Wetland Inventory maps and photo-interpreting color infrared imagery to provide complete statewide coverage of Colorado wetlands.

## Research and Monitoring

Our research often focuses on obtaining a better understanding of species' natural history. Examples include species distribution, habitat requirements and use, pollinator ecology, and population dynamics. Management-based work includes evaluating the effects of energy development on wildlife, the influence of disease on amphibian populations, and relationship between management actions and habitat use by amphibians,



bats, lizards, and small mammals of conservation concern.

CNHP's monitoring efforts provide feedback that is critical for guiding management of Colorado's species and natural areas.



Long-term and ongoing work to monitor species status includes the federally threatened Preble's Meadow Jumping Mouse, the federally threatened Pawnee Montane Skipper, the boreal toad, and several federally listed plants. We also monitor species' habitat response to management. Examples include Lesser Prairie-chicken habitat in southeastern Colorado, noxious weed monitoring at the U.S. Air Force Academy, and species and ecosystems response to grazing management.

## CONSERVATION DATA IN ACTION

Southeastern Colorado is home to the largest intact



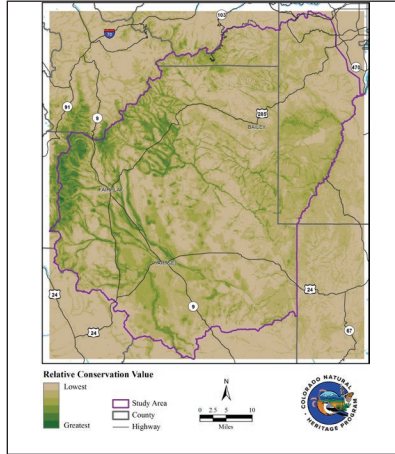
Photo: Michael Menefee

shortgrass prairie landscape in the United States. More than 100 rare species thrive here. Nearly 40 local private landowners have joined forces with CNHP scientists to identify and safeguard the

region's wildlife. Pictured here, a rare tiger moth lays eggs on dwarf milkweed, itself an imperiled plant native to shortgrass prairie.

## Conservation Planning

CNHP collaborates with many partners to support local and regional conservation needs by facilitating planning efforts, providing biological expertise, developing and analyzing spatial data, and preparing conservation and management plans. CNHP is also developing species distribution models, landscape integrity and threats models, and other GIS tools to help resource managers, conservationists, and others set priorities and identify needed conservation actions.



## Climate Change

CNHP is actively engaged in climate change assessment and adaptation planning throughout Colorado and the western U.S. We are working to identify the state's most vulnerable species and ecosystems, conduct in-depth analyses of the key factors influencing vulnerability, and develop adaptation strategies to ameliorate sensitivity and improve resiliency.

## Vegetation Classification

CNHP ecologists are helping to define and map natural communities and ecological systems across the west. Since 2000, we have been assisting land management agencies in developing vegetation inventories. This is a long-term effort to build baseline vegetation data needed to improve land management through greater reliance on scientific knowledge. To date, we have mapped vegetation and conducted field accuracy assessments for National Park Service and Army Corps of Engineer units in Colorado, Wyoming, Montana, Nebraska, South Dakota, North Dakota, Arizona, and Nevada.

## Data Management and Sharing

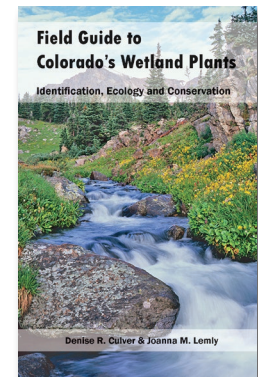
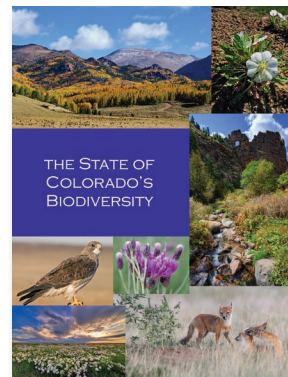
CNHP houses and continuously updates biological and mapping data for Colorado, as part of the multi-national NatureServe Network. These data are the most comprehensive source of locational information about imperiled species and ecological communities in Colorado. We also create customized mapping, database, and website products to aid clients in managing biological resources, and/or analyzing biological field sampling data.

## Environmental Review

CNHP's environmental review services provide information for evaluating potential impacts to rare species and their habitats from proposed development projects. Our environmental review clientele includes landowners, consulting firms, local planning departments, nonprofits, and industry. Guidance from CNHP supports a proactive approach to development and planning for wind energy, pipelines, roads, growth management, easement purchase, and numerous other activities that seek to avoid and minimize adverse impacts to sensitive or imperiled species and habitats.

## Publications

Contact CNHP to purchase our newest publications!



## WHY CONSERVE BIODIVERSITY?

We are learning more every day about the answers to this question. Biodiversity is the incredible, dizzying variety of life that surrounds us, including all of the earth's plants, animals, their habitats, and the natural processes that they are a part of. Biodiversity is the cornerstone of our existence on Earth. We depend on it for the air we breathe, the food we eat, and the water we drink. Wetlands filter pollutants from water; trees and plants reduce global warming by absorbing carbon, and bacteria and fungi break down organic material and fertilize the soil that nourishes our food supply.

Medicines originating from wild species, including penicillin, aspirin, taxol, and quinine, save millions of lives and alleviate tremendous suffering. Forty percent of all prescriptions are for medicines that originate from plants and animals. No one knows how many more cures await discovery, hidden in Earth's poorly studied species. There are 80,000 species of edible plants known on Earth, but 90% of the world's food comes from a mere 20 species. Edible plant species, both those we know of and those we don't, offer tremendous possibilities for feeding the hungry and protecting the security of our food resources. Breeding crop cultivars with their wild counterparts can also confer resistance to diseases and increase yield. It has been empirically shown that native species richness is linked to the health of ecosystems, as is the quality of life for humans. The connections between biodiversity and the sustainability of our future appear closer and closer the more we look. We literally need to conserve biodiversity as if our lives depend on it!








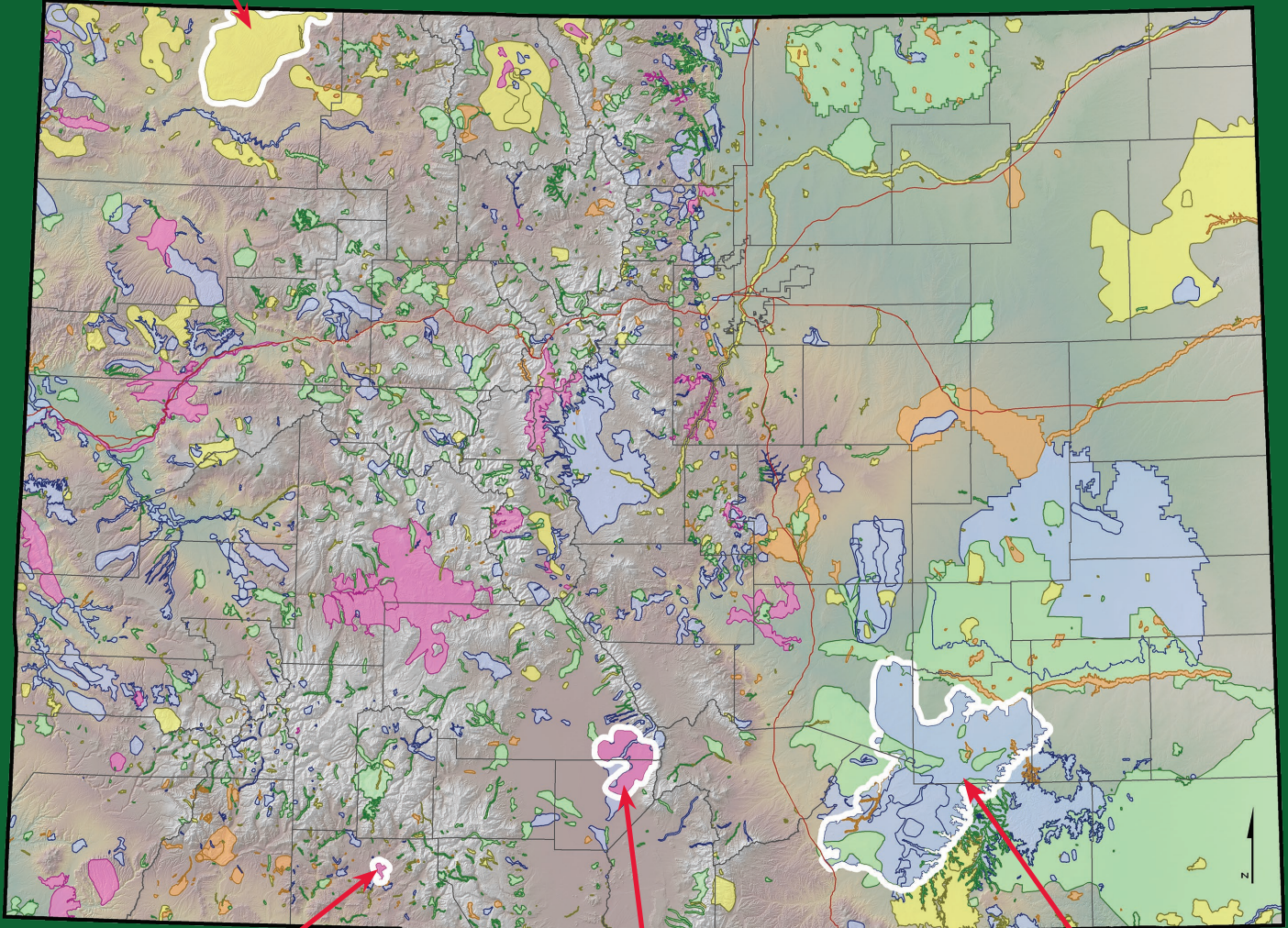
**Great Divide PCA:** Contains vital habitat for the globally vulnerable (G3G4/S4) Greater Sage Grouse.  
Photo: CNHP

## Colorado's Potential Conservation Areas

Potential Conservation Areas (PCAs) provide a valuable planning tool for identifying areas critical for maintaining biodiversity in Colorado. CNHP delineates PCAs using scientific methods that focus on the land area needed to provide habitat and support the ecological processes upon which a particular species, suite of species, or natural community depends. We use current knowledge about each species' life history in conjunction with information about topography, hydrology, and other landscape features.

### PCA Biodiversity Significance Ranks

- |  |   |  |
|--|---|--|
|  B1: Outstanding Significance |  B3: High Significance     |  B5: General Interest |
|  B2: Very High Significance   |  B4: Moderate Significance |  |



**Mill Creek at Pagosa Springs PCA:** Contains the known global range of the Pagosa skyrocket (G1S1).  
Photo: David Anderson



**Great Sand Dunes PCA:** Includes the global range of the Great Sand Dunes Tiger Beetle (G1S1) and supports numerous rare plants and communities.  
Photo: CNHP



**Purgatory Prairie PCA:** Vast tracts of high quality habitat for plains species including the Swift Fox (G3S3).  
Photo: Jim Giannfrido