



OUTSTANDING WATERS CLIMATE REFUGIA



Badger Creek, a major tributary to the Arkansas River, is nominated for Outstanding Water designation. Wild Connections' climate modeling highlights this drainage as climate refugia and ecological connectivity area.

Photo: Deb Callahan

Modeling Climate Refugia

by Alison Gallensky

As a long time volunteer and board member for Wild Connections I learned how to combine my passion for wild places, my fascination with maps, and my comfort with computers into a career doing mapping and geospatial modeling using Geographic Information Systems (GIS) technology. I currently work for Rocky Mountain Wild, an environmental non-profit. Like Wild Connections, Rocky Mountain Wild protects wild lands and wildlife. Rocky Mountain Wild, however, works in the greater Southern Rockies region that includes Wild Connections' region in Central Colorado, along with the rest of Colorado and portions of neighboring states.

Much of my work has focused on helping conservation organizations identify and map places that need protection. Over the last three years I have been working with Wild Connections to help identify the most important places to protect in the face of a changing climate. Because this means predicting the future, there is not a single approach that is guaranteed to identify

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Mission: Wild Connections, a science-based conservation organization, works to identify, protect and restore lands of the Upper Arkansas and South Platte watersheds to ensure the survival of native species and ecological richness.

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President's Message

Refugia

from Jim Lockhart

This issue of Landscapes focuses on “refugia,” places in which organisms can survive during a period of unfavorable conditions, a concept which, in our warming world, often means areas which are to some degree insulated from the effects of climate change. Much of the work which two of our authors, Karl Ford and Alison Gallensky, have focused on during the past few years has been the identification of these areas and their integration into our Wild Connections Conservation Plan, as part of our effort to adapt the plan to meet the realities of climate change. We are happy in this issue to share some of their findings and recommendations.

Although Wild Connections has generally had an “on the ground” focus on public lands and land use, we recognize that a functioning ecosystem includes not only the surface of the land, but also the atmosphere which surrounds our planet and the waters which flow across the land. This issue therefore also contains an article by our Conservation Director, John Sztukowski, on Outstanding Waters, streams within our region which are in a sense flowing refugia and which, like relatively pristine areas of land, are of vital importance in preserving an intact ecosystem.

I think we all have our own, personal refugia: places which hold special memories for us, which we particularly enjoy thinking about and returning to, and which we especially love and hope to see protected. But I think we also recognize that much of the attraction of these special places lies in the fact that they are connected to the larger landscape: to the creatures that move back and forth across them, to the waters that flow through them, to the clean air and long vistas that many such places afford. I know that this past summer, I twice went to visit a favorite place and



Smoke from the 2021 wildfires from hill top near Hole in the Rock Gulch, on the boundary of BLM Red Canyon Lands with Wilderness Characteristics (LWC).

Photo: Jim Lockhart



Lost Creek.

Photo: Jim Lockhart

returned early and disappointed because smoke from wildfires a thousand miles away had so impacted the view. We must therefore always recognize that protecting one part of our world requires protecting it all.

In early 2020, the COVID-19 virus struck our nation and the world, and only now, more than two years later, can we hope that its impacts are finally beginning to lessen. We recognize that the threat has not yet ended and will continue to work with cooperating agencies and cosponsoring organizations to keep our outings and events safe, and to comply with their directives and restrictions. ☺

Wild Connections' Founder on the Keep It Wild Partners Initiative

by Jean Smith

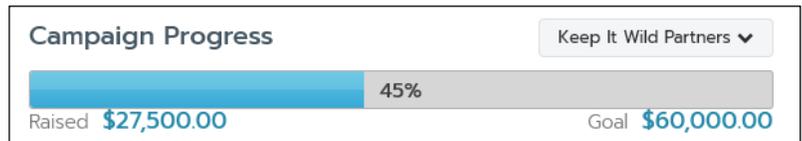
Have you ever found yourself facing a big task, and you didn't have everything you needed to get it done? Many years ago, I was overwhelmed one evening when there was a call for MORE CHICKEN NOW! Our conference center was hosting 50 people, and the legs and breasts of chicken were rapidly disappearing as each person took two! My kitchen crew knew something extraordinary was required, and so they served up all the wings, doubled the dessert, and dinner was saved. Most important, it took a team working together to pull this off.

Wild Connections is in a similar position now. But it's a lot more serious than a lack of chicken legs!

All of us, you as individuals and our organization, are facing unprecedented challenges to the Arkansas and South Platte basins: climate change, increasing recreation, proposals for energy development, loss of native species... **Does WC have what is needed to meet these challenges? Do we have the people power ready to respond to the call?**

- What happens when our competent and hard-working Conservation Director – the only paid staff – must decline or postpone important actions because his schedule is over-filled already?
- What happens when our stellar team of volunteers – hike and field trip leaders, restoration project managers, and the finance, fund-raising, and communications managers – can no longer continue?

Wild Connections must increase our paid staff to effectively mobilize people to promote conservation. It's going to take an extraordinary effort of people working together as partners for the future of Wild Connections. **So, we have launched the Keep It Wild Partners, a fund designated for future staff.** And you may be the Partner who makes this change possible with your extraordinary, or just ordinary, gift.



We intend that **Keep It Wild Partners will have \$60,000 in hand by Dec 31 to provide salary and expenses for new staff in 2023.** Conservation Director John Sztukowski will have someone standing with him to take on whatever challenges and opportunities come our way. There will be at least two full time staff to create and carry out vigorous advocacy and proactive programs. Volunteer leaders will have staff to team with, in effect doubling their capacity.



\$60,000 is a lot of money!
The good news is that Wild Connections Board members have already committed \$27,500!
You can join them in this partnership right now with your check or online donation. We suggest a minimum gift of \$100, but any amount will be received with gratitude.

- Keep It Wild Partners will
- Provide you with the satisfaction that comes with being part of a group of like-minded people supporting the same cause – the cause of wildlands protection.
 - Recognition on our web site and publications by name or as Anonymous.
 - Invitations to special events.

Our Board members invite you to join them as a Keep It Wild Partner. Together we can ensure that Wild Connections will have staff people ready to meet the coming challenges.

Wild Connections needs another staff person to stand with John Sztukowski to take on challenges like protecting Hindman Gulch. Above Hindman Gulch.

Photo: Curt Nimz

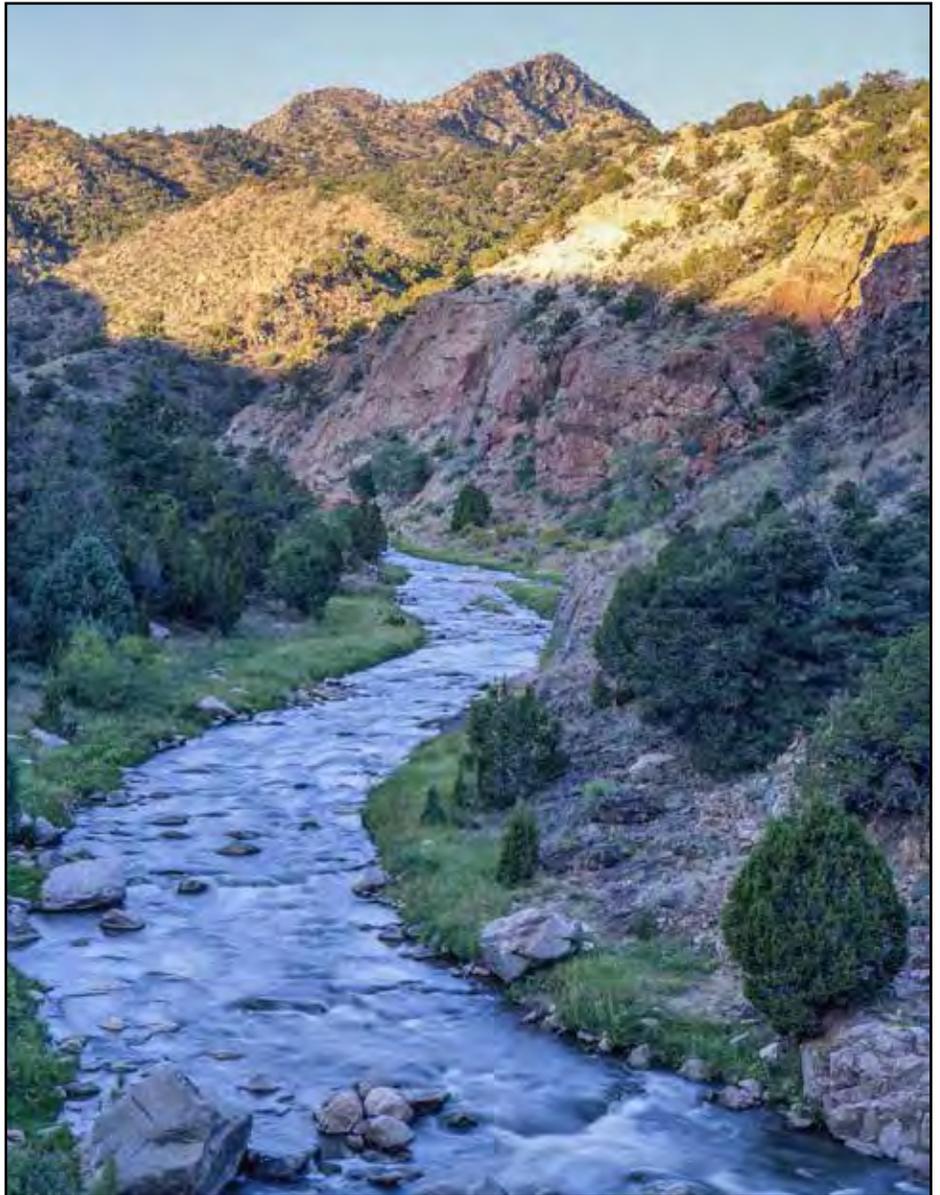
Outstanding Waters in the Arkansas River Basin

by John Sztukowski

Outstanding Waters (OW) is a Colorado state designation for streams, rivers, and other water bodies that have exceptional water quality and other values that should be protected. OW is part of the Outstanding National Resource Waters, derived from the Clean Water Act designation, overseen by the EPA but implemented by individual states. It's an underutilized tool in protecting local waters and offers some of the highest levels of water protection in the state.

Colorado's Water Quality Control Commission, part of Colorado's Department of Public Health and Environment (CDPHE), reviews new basins for OW designation every three years and has just begun to look at the Arkansas River Basin. The Commission does its own assessments and designates OW in the state, however any person or organization can submit nominations. Wild Connections is working with a group of other organizations to identify and test candidate streams for potential nomination.

For a water body to qualify for OW, it must meet three key criteria: First, it must pass 12 specific water quality testing parameters. Second, the water body must have an outstanding natural resource to protect, like Gold Medal trout fisheries or outstanding opportunities for recreation. Our group is hoping that cold water refugia from climate change would qualify under this criterion as well. Lastly, waters must require protection in addition to state water quality and antidegradation guidelines, for example streams flowing within a protected area like a national park or Designated Wilderness Area.



Grape Creek could qualify for Outstanding Water designation.

Photo: John Fielder

Currently in the Arkansas River basin, there are only OW protections for streams in the Collegiate Peaks and Mount Massive Wildernesses. We are hoping to see the state add OW protections to the many other streams that flow through and out of Wilderness areas in the Arkansas River basin, such as in the Buffalo Peaks, Sangre de Cristo, Greenhorn Mountain and Spanish Peaks Wildernesses. To this end, we hope that the Commission will also consider candidate streams that flow through proposed wilderness areas and BLM managed Wilderness Study Areas like Grape Creek, Beaver Creek, Badger Creek and East Gulch in Table Mountain. We will also be seeking OW protections for similarly deserving streams that flow through BLM identified Lands with Wilderness Characteristics like Badger Creek South and Fourmile Creek in Upper Red Canyon.

This three-year OW process is just beginning for the Ark Basin, and our group is following this process with hopes of submitting our own nominations. This first year is devoted mainly to identifying and testing candidate streams. Next year, the Commission will do a scoping process, when we can submit nominations. During the third year they will analyze the proposed waters based on the above criteria as well as public support. We will have more information for you as it becomes available, including possible field trips to test candidate streams as well as advocacy opportunities. Wild Connections looks forward to this OW process of protecting deserving waters in our region. ☺

Climate Refugia in Central Colorado

by Karl Ford

If you are a regular Landscapes reader, you may have read about our Climate Refugia project. The Forest Service defines climate change refugia as areas that remain relatively buffered from contemporary climate change over time and enable persistence of valued physical, ecological, and socio-cultural resources. The key attribute of refugia is their relative persistence, despite changes in the climate in the surrounding landscape.

As a scientist, I try to keep up on journal articles on climate science, especially those that pertain to the Rocky Mountains. We are seeing an explosion of scientific articles on increasing wildfire, drought, warming, declining mountain snowpack, threats to our watersheds, forests and wildlife. We are talking about complete loss or transformation of our forest types and potentially

These models contain maps of undisturbed (roadless and undeveloped) areas that contain important wildlife values that could persist into the next century if protected.

total loss of our snowpack in our children's lifetime. Space does not allow me to document all of this, but my new book, *Colorado Forests in Climate Crisis; A Field Report from the Colorado Trail*, attempts to do just that.

Colorado, with the highest average elevation of the lower 48 states, can continue to provide places where temperature-sensitive native plants and wildlife can thrive if those places are left intact.

Because of these threats and Colorado's unique characteristics, in the last few years, Wild Connections Board members (thanks to the efforts of Alison Gallensky) undertook a sophisticated Geographical Information Systems (GIS) modeling project to identify areas on public lands within our geography that can protect native species. These models contain maps of undisturbed (roadless and undeveloped) areas that contain important wildlife values that could persist into the next century if protected.

Further, these science-based models were constructed to account for topographic features that will stay cooler and wetter, are most likely to harbor native plants and wildlife, AND provide corridors for plants and wildlife to adapt and migrate northward or uphill. Scientists call these climate refugia. They tend to be small and scattered, but when linked up, can also serve as corridors. Stream and river valleys for example, are not only movement corridors for wildlife but stay cooler and wetter.

Our modeling is complete and we recently presented to some of the top conservation scientists in the nation for their peer-review comments. Wild Connections will soon publish our results and plan to brief land managers in our geography. We will advocate for greater protection of key refugia in agencies' land management planning and decision processes.

Wild Connections also hopes to offer climate education hikes in coming months for our members to help them understand these concepts and help us advocate for protection. You can learn more about the project at <https://www.wildconnections.org/conservation/climate-change/>. ☞



North Fork of Lost Creek.
Photo: Karl Ford

Cucharas Canyon

Cucharas Canyon is a rare intact wild canyon area on Colorado's eastern plains. The approximately 6,050 of BLM lands are surrounded by private lands with similar characteristics. This could provide an opportunity for combined public and private land protections. The region is important for swift fox, black-tailed prairie dogs, the Simius roadside skipper butterfly, and rare plant communities. BLM found that this area has wilderness characteristics.

The BLM portion of Cucharas Canyon scores exceptionally well as a climate refugia based on high scores across all model components. Here is how this area scored in the model:

Cucharas Canyon BLM: protect as a climate refugia
Climate Refugia: Best
Climate Resilience: Better
Ecological Connectivity: Best
Natural Landscape: Best
Current Biodiversity: Better

Model Scoring

- Best
- Better
- Good
- Fair
- Poor



Cucharas Canyon.
Photo: Wild Connections

Modeling Climate Refugia

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these places. Instead, conservation biologists and geospatial experts recommend combining multiple models. This is the approach I took with help from Karl Ford. Our model was recently reviewed by experts from Colorado Natural Heritage Program, Conservation Biology Institute, NatureServe, National Audubon Society, and The Nature Conservancy. I am currently completing the modeling portion of this project by incorporating suggestions from these experts. The next steps include applying the results of the modeling to prioritize places to protect and restore that can serve as climate refugia and/or to connect the refuges.

The goal of the modeling was to identify **Climate Refugia**, places where biodiversity (a diverse variety of healthy native animal and plant communities) will thrive as the climate changes. These places were identified by first modeling the following four components:

- **Climate Resilience:** Places that will continue to be suitable for species in the surrounding region as the climate changes.
- **Ecological Connectivity:** Movement corridors and stepping stones of suitable habitat allow seasonal movements (migration), dispersal by new generations, and shifts as climate change cause habitats to move.
- **Current Biodiversity:** Important locations for animal and plant species and the ecosystem types they rely on today.
- **Intact Natural Landscape:** Large, intact, natural landscapes, also called core areas, along with movement corridors are key to maintaining high levels of biodiversity.

Climate Refugia are identified by first focusing on places that score well for Climate Resilience using a national model created by scientists at The Nature Conservancy. To add current and local context, the model also looks for places that score well for Ecological Connectivity, Current Biodiversity, and/or Intact Natural Landscapes. These component models were created using a variety of data sources created by national and statewide experts and incorporate data collected by Wild Connections. We plan to advocate to protect both Climate Refugia and areas important for Ecological Connectivity to create a connected network. As I write this article I am also preparing to present these results to a wide audience of land managers and organizations at the Colorado Parks and Wildlife Partners in the Outdoors conference.

To present more details about the model, here are some examples of places in the Wild Connections region that score well according to the model.

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Browns Canyon

Browns Canyon National Monument is a wild stretch of the Arkansas River and adjacent lands that stretch between Salida and Buena Vista on the eastern edge of the Arkansas River Valley. This area is important for Bighorn sheep, elk, mule deer, a wide variety of other mammals, birds, and rare plant communities. These 21,586 acres include Bureau of Land Management (BLM) and National Forest lands. About 7,450 acres of the BLM lands are a Wilderness Study Area (WSA). Most of the National Forest lands are roadless. The wild portions of the monument have been proposed to be protected as wilderness as part of the Colorado Wilderness Act.

The WSA portion scores well as a climate refugia and the National Forest portion is especially suited for connectivity. Here is how those portions scored in the model (scores range from Poor, Fair, Good, Better, and Best).

Browns Canyon WSA: protect as a Climate Refugia
Climate Refugia: Better
Climate Resilience: Better
Ecological Connectivity: Better
Natural Landscape: Fair
Current Biodiversity: Best

Browns Canyon National Forest Portion:
protect for Ecological Connectivity
Climate Refugia: Good
Climate Resilience: Good
Ecological Connectivity: Best
Natural Landscape: Fair
Current Biodiversity: Fair



Browns Canyon.
Photo: Friends of Browns Canyon



Culebra Peak.
Photo: David Herrera

Bar NI Ranch

While Wild Connections focuses primarily on public lands, there are important intact private lands in our region as well. In the southern portion of the Sangre de Cristo Mountains, Culebra Peak is a prominent feature. Southeast of the peak, over 35,000 acres of the historic Bar NI Ranch and surrounding lands have been placed under a conservation easement through the efforts of The Nature Conservancy. This area includes a rich diversity of rare and common plants, outstanding elk range and other wildlife habitat.

This area scores exceptionally well for ecological connectivity and serves as an example of the importance of private land conservation.

Bar NI Ranch: protect for Ecological Connectivity
Climate Refugia: Better
Climate Resilience: Fair
Ecological Connectivity: Best
Natural Landscape: Best
Current Biodiversity: Good

Model Scoring

- Best
- Better
- Good
- Fair
- Poor

Modeling Climate Refugia

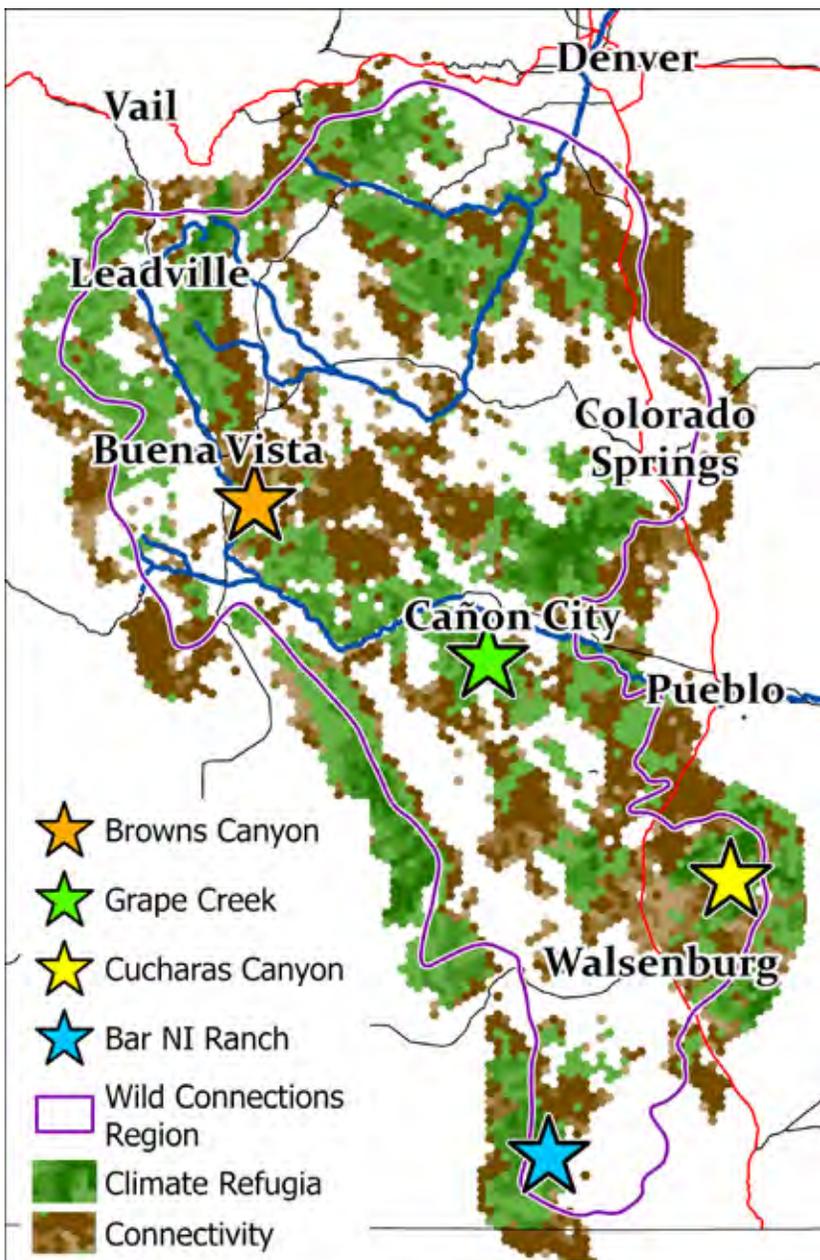
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Learn More

Get reports about the biodiversity values of Browns Canyon, Bar NI Ranch, Cucharas Canyon (Vigil and Saint Vrain), and Grape Creek (Grape Creek at Bear Gulch and Curley Peak) here: <https://cnhp.colostate.edu/ourdata/pca-reports/>

Learn about Cucharas Canyon and other wild Bureau of Land Management lands here: <https://medium.com/blmwild/protecting-blmwild-places-in-eastern-colorado-80bfb576a73c>

Learn more about this project: <https://www.wildconnections.org/conservation/climate-change/>



Map of Case Studies.
Map: Alison Gallensky

Grape Creek

Grape Creek flows through undisturbed lands south of Cañon City. Surrounding lands include a BLM Wilderness Study Area and roadless National Forest lands. Grape Creek has been proposed to be protected as Wilderness as part of the Colorado Wilderness Act. Mule deer, mountain lion, black bear, various small mammals, wild turkey, various species of raptors, and trout are found here. This area is especially important for rare plants and plant communities.

Both the BLM and National Forest portions scored exceptionally well as a climate refugia based on high scores across all model components. These areas also scored exceptionally well for connectivity. Here is how these portions scored in the model:

Grape Creek Wilderness Study Area: protect as a Climate Refugia
 Climate Refugia: Best
 Climate Resilience: Better
 Ecological Connectivity: Best
 Natural Landscape: Better
 Current Biodiversity: Good

Grape Creek National Forest Roadless (Tanner Peak): protect as a Climate Refugia
 Climate Refugia: Best
 Climate Resilience: Good
 Ecological Connectivity: Best
 Natural Landscape: Good
 Current Biodiversity: Best

Model Scoring

- Best
- Better
- Good
- Fair
- Poor

Support the Colorado Wilderness Act

By Jim Lockhart

Protections for new Colorado Wilderness are halfway across the finish line. In September, the Colorado Wilderness Act, sponsored by Representative Diana DeGette, passed the United States House of Representatives as part of the Protecting America's Wilderness and Public Lands Act (PAW+) legislation. What is still needed now is action by the United States Senate to enact this into law.

Here are the six areas in our region of Colorado which are at stake. Let our Colorado Senators Michael Bennet and John Hickenlooper know that you support the PAW+ bill and that they should too! Take action at: <https://www.coloradowildernessact.org/take-action/>



Browns Canyon, 17,922 acres.
Photo: Wild Connections



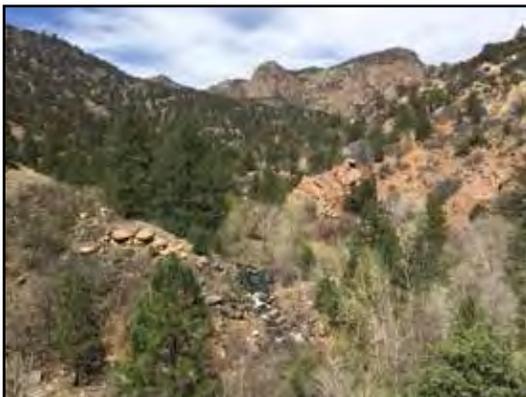
McIntyre Hills, 16,481 acres.
Photo: Jim Lockhart



Badger Creek, 23,116 acres.
Photo: EcoFlight



Table Mountain, 23,559 acres.
Photo: Jim Lockhart



Beaver Creek, 35,251 acres.
Photo: John Sztukowski



Grape Creek, 32,884 acres.
Photo: EcoFlight



Cottonwood Creek Canyon, Utah.
Photo: John Stansfield

Tsegi

by John Stansfield

There is a wind,
a wind that dances up to the canyon bend,
twisting wildly in the sun.

From the dry creek bed
the sand rises, the wind's brief partner,
and falls, scattered about.

Just above,
in the alcove niche,
the owl waits alone for night
when wind dances are done.

Here and There

by John Stansfield

Creekside trees play a simple song
And pass it along its way.
The wind's the harp they play it on.

This is part of the wind's song.
It did not begin where it began.
It will not end when it ends.

Like the fish with the water
And the deer in tousled grass,
My roots grow deep in this place.

This is part of our song.
It did not begin where it began.
It will not end when it ends.

Beaver Creek is flowing now
And time should take no trouble
To stop her and my heartbeat,

For I am here and I am there.



Warm summer grasses, Hastings Mesa, CO.
Photo: John Stansfield

Follow Wild Connections on social media



It's a Community!

Wild Connections is here today because of the people who volunteered to map a roadless area, hoisted a mattock to obliterate an illegal trail, wrote our Congress persons in support of Wilderness, joined in a back country hike or donated their time and financial resources.

We are not a membership organization in the traditional sense, but anyone that makes a donation of \$10 or more or volunteers becomes a member of our community with the satisfaction of knowing you are part of a like-minded group of people.



Sheep Creek work day volunteers, just a sample of our community.

Photo: Wild Connections

Ramp up your partnership

Make a donation

You, as an individual, are Wild Connections' most reliable source of income. Over the past two years, 46% of our income came from individuals. We're a smallish organization, but \$107,000 out of the two year total of \$230,000 is big, big, big!

- Make a one-time gift or a continuing monthly gift. Wild Connections can receive your donation on line at <https://wildconnections.org/donate> or use the enclosed envelope.
- Make a tax-free distribution from a retirement plan if you are over age 70 ½, or from a Donor Advised Fund.
- Join the Keep It Wild Partnership to build the fund for future staff. (See Wild Connections' Founder on the Keep It Wild Partners Initiative article)

Multiply your donation

- Increase your gift through your employer's matching gift program
- Donate your outdoor gear to Mountain Equipment Recyclers (<https://www.merecyclers.com>) designated for Wild Connections. We get 50% of the sale price
- Designate Wild Connections as your organization in your Amazon Smile account

Participate

- Go on a back country hike. Check <https://wildconnections.org/events> for the schedule
- Get ready for summer or fall habitat restoration work days and project monitoring. See <https://wildconnections.org/events> for these events
- Get your service club or conservation organization to schedule a live or on-line Wild Connections presentation

It is a community, and we welcome you! ☺

Volunteers Giving Back: The Wild Things



John Sztukowski from *Protecting Grape Creek* [video] by the Wild Things.

Photo: The Wild Things

With this quirky name you might expect anything from characters in Maurice Sendak's children's book to a British rock band. Enter the real Wild Things, a student group at Pikes Peak Community College. This spring they partnered with Wild Connections to conduct and film a hike for a service-learning project to help raise awareness for WC's mission. Their trip south of Cañon City to Grape Creek with John Sztukowski and Jim Lockhart resulted in this short YouTube video *Protecting Grape Creek*. Thanks to The Wild Things for their time and talents. ☺



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Readers who get the print Landscapes are encouraged to change to the online version at www.wildconnections.org/get-involved.

Together we can save trees, printing, postage and delivery expenses.

Photo Sustainable forest courtesy FSC