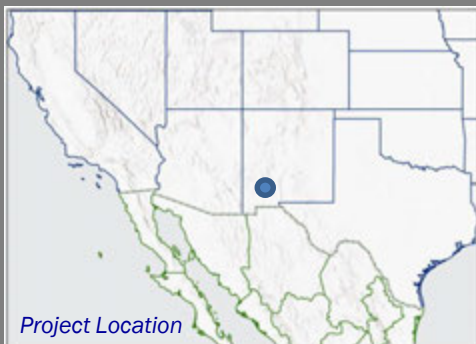


## RESTORATION

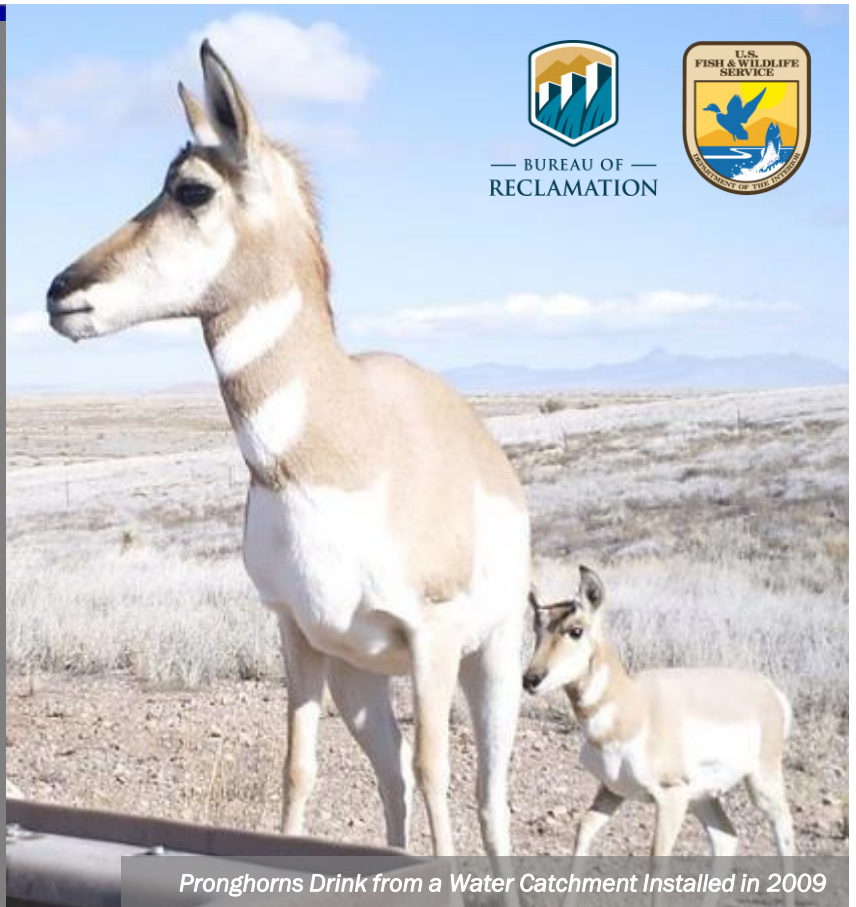
# Habitat Restoration and Ciénaga Conservation on the Pitchfork Ranch



Ciénagas are shallow wetlands through which water slowly migrates among dense vegetation. Over the last century, up to 95% of ciénagas have disappeared, depleting soil and decreasing riparian habitat. Since 2005, A.T. and Lucinda Cole have been restoring the Pitchfork Ranch in New Mexico, which contains 8.4 miles of the Burro Ciénaga, one of the few remaining ciénagas in the American southwest. Restoration simultaneously addresses historic ranching impacts, species extinction, and soil depletion - issues exacerbated by climate change. By restoring a cattle ranch, the Coles aim to demonstrate sustainable cattle production while encouraging others to also improve their land's habitat and wildlife.



Project Location



Pronghorns Drink from a Water Catchment Installed in 2009

## KEY ISSUES ADDRESSED

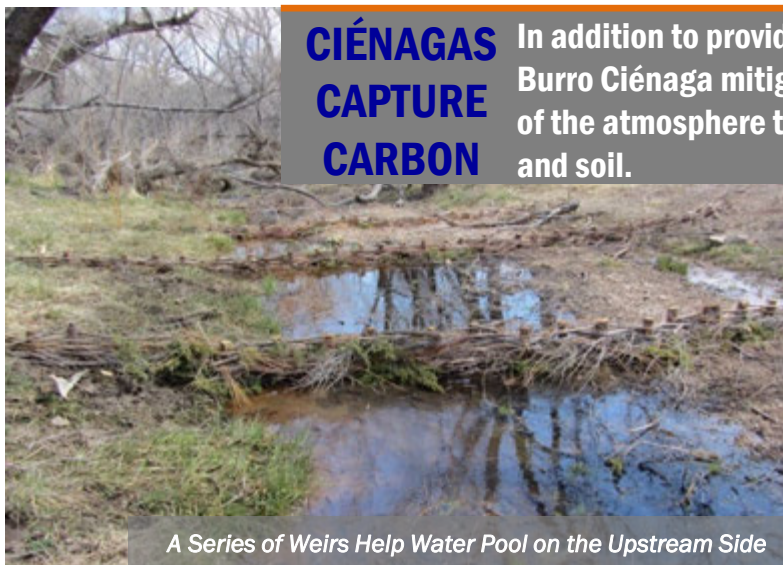
The Coles are working to address ciénaga degradation, habitat loss, and impacts from historic ranching practices. Erosion has reduced the Burro Ciénaga from a two-football-field-wide, slow-moving feature to a single channel, creek-like stream. This has led to soil loss, drained the water table, and reduced important riparian habitat in an arid region. Habitat loss is a key driver of species extinctions, and species are further threatened by long-term drought. A history of raising livestock left the arid landscape highly vulnerable to drought conditions. Due to ranching's cultural significance, demonstrating complementary restoration and cattle production on the landscape is essential to improving habitat conditions.

## PROJECT GOALS

- Build grade-control structures to restore the Burro Ciénaga and halt stream and sediment degradation
- Restore riparian habitat to support wildlife and plant species
- Demonstrate the benefits of restoration to encourage other landowners, especially ranchers, to do the same

## CIÉNAGAS CAPTURE CARBON

In addition to providing habitat and preventing erosion, the restored Burro Ciénaga mitigates climate change. Plants draw carbon dioxide out of the atmosphere through photosynthesis and store it in plant tissue and soil.



A Series of Weirs Help Water Pool on the Upstream Side

## PROJECT HIGHLIGHTS

**Burro Ciénaga Restoration:** The Coles constructed grade-control structures to slow water runoff, support riparian vegetation, and deepen the water table. This decreases soil loss and captures sediment to refill eroded areas.

**Cattle and Conservation:** Through strategic placement in high-rainfall areas, the Coles can raise a small herd of grass-fed cattle while also fencing them off of the ciénaga, allowing riparian habitat regrowth. Importantly, this demonstrates cattle and conservation can share the same landscape.

**Habitat Creation and Reintroductions:** Due to habitat creation such as tree and vegetation replanting, the Pitchfork Ranch supports a diverse array of wildlife and plant species. With improved habitat, the Coles, as part of state initiatives, reintroduced the Chiricahua leopard frog (*Lithobates chiricahuensis*) and Gila Topminnow (*Poeciliopsis occidentalis*) to the ranch.

**Documenting Success:** The Coles continue to document long-term restoration through annual same-location photography, continuous groundwater data, and remotely-sensed imagery. This documentation helps the Coles quantify changes, provide evidence of success, procure funding, and encourages adoption of restoration practices on similar ranches.

## Funders

- Natural Resources Conservation Service
- New Mexico Department of Game and Fish
- See online for full list of funders

CCAST Author: Erin Connolly, Drought Learning Network, January 2023.

Photos courtesy of A.T. and Lucinda Cole/ Pitchfork Ranch

For more information on CCAST, contact Genevieve Johnson ([gjohnson@usbr.gov](mailto:gjohnson@usbr.gov)) or Karlee Jewell ([karlee\\_jewell@fws.gov](mailto:karlee_jewell@fws.gov)).

Visit CCAST:



## LESSONS LEARNED

The Coles emphasize that restoration requires time, funding, and knowledge. The Pitchfork Ranch restoration will continue for decades, and will become increasingly important through long-term drought and other effects of climate change. Restoration is also an expensive endeavor, but funding is available, including from federal programs such as those through the Natural Resources Conservation Service. Additionally, restoration should be a collaborative effort among ranchers, land managers, scientists, and other professionals, to leverage collective knowledge and ensure efforts are well-planned and properly executed.

The Coles understand that restoration requires ranchers to sacrifice time, which is especially valuable during prolonged drought. To best spread the word about restoration, they work with local partners to recruit and support their neighbors.

The holistic work at Pitchfork Ranch highlights the multifaceted benefits of ciénaga habitat restoration, and provides great support for future longevity and protection of arid rangelands.

## NEXT STEPS

- Continue restoration initiatives and acquire more funding for conservation projects
- Engage the public and ranchers in conversations about restoration through visual and physical demonstrations of success at Pitchfork Ranch
- Publish a book, scheduled for 2024 release, to further communicate the importance of restoration to a wider audience

For more information on this project, contact A.T. and Lucinda Cole: [atandcinda@gmail.com](mailto:atandcinda@gmail.com)



*Euphorbia rayturneri*, a Plant Discovered on the Ranch in 2009