NATIONAL *fish, wildlife & plants*
CLIMATE ADAPTATION STRATEGY

Project Title: Watershed/Ciénaga Restoration for Climate Adaptation & Resilience

Headline Title: Saving Hotter & Dryer Ciénaga Habitat

Brief Summary: A decade-long collaborative restoration project at the 11,393-acre Pitchfork Ranch for ciénaga, canyon, and grassland habitat

Project Location: Grant County, Southwest New Mexico

Partners: The ranch is owned by A.T. and Cinda Cole and has more than 30 partners. The groups involved in this project for the Cienaga & water table restoration are: USFWS, NRCS, BLM, Gov REI, New Mexico Office of Natural Resources Trustee (ONRT), NMSU, WNMU, The Peregrine Fund, TNC, and local scientists. We are also working in conjunction with Dave Jones on the some 20,000 acre Thorn Ranch south of us and the Upper Burro Cienaga Watershed Association (four ranches) to the north.

Background: We purchased and retired to the Pitchfork Ranch in 2004 and over the last decade have been restoring this historic cattle ranch, encouraging restoration, introducing at risk species, and pursuing climate adaptation strategies. The Pitchfork Ranch lies at 5100' elevation, just west of the Continental Divide in southwest New Mexico. Although hilly and mountainous, the land is primarily rolling Chihuahuan grassland, one of the most biologically diverse arid regions in the world. The ranch consists of 11,393-checkerboard, split-estate acres, 5,160 deeded, the balance State and BLM lease land. The habitat is Tabosa dominated grassland with over 200 documented plants, including 70 grasses, juniper, willow, oak, ash, hackberry, Arizona walnut and wild grape in the cañyon. Spring ecosystems (which include ciénagas) are among the most threatened ecosystems on earth. This ranch has both.

The 47 mile long Burro Cienaga, (correctly spelled with an "a," no tlde) is a unique desert wetland and the ranch's most important feature. A Spanish term meaning "slow moving water or marsh" the ciénaga (literally "cienagua" or "100-waters," but linguistically derivative from the Latin word for "silt") is perennial and bisects the ranch north to south. The ciénaga is fed by perennial Ojo de Inez (now called Cienaga Spring) and canyons that drain from a 58-square-mile watershed.

Extreme flood & drought cycles, eradication of beaver, sheep & corporate cattle overstocking in the late 1880s, and the absence of fire have dramatically altered the area's natural marsh balance. The overarching goal detailed in the formal ranch management plan is habitat repair, using "flood-n-flow" based restoration practices and accompanying sediment deposition to nudge the ciénaga and surrounding land toward its pre-settlement condition - to get the water back.

Existing wildlife include mule deer, pronghorn, peccary, skunk, raccoon, coati, fox, badger, rock squirrel, 12 species of rodent, mountain lion, black bear, elk and over 140 bird species (65% of those of Continental importance). The endangered Aplomado falcon, Gila topminnow, Chirichahua leopard frog, and candidate species Wright's Marsh Thistle have been reintroduced; the *Eurphorbia rayturni*, previously unknown to science, was found here and is currently proposed for Red Listing.

The ranch received the American Fisheries Society, Arizona/New Mexico Chapter Conservationist of the Year Award for 2013.

Project Goals: [1] Raise the ciénaga bed above the 1 to 2 feet gained thus far, continue capturing more than the 29,000 tons of sediment retained thus far, [2] further raise the water table above the 11-inches measured by 9 piezometers two years ago and water holding on the ranch, [3] further expand the riparian zone for wildlife that will struggle under the new normal of human-caused climate change, [4] preserve the flyway, migration corridor and only live water 35-miles in any direction, [5] continue monitoring species range expansion (we already have northern most sightings of a moth, bird and mouse) [6] continue measuring lessened annual rain fall (under 8" in 12" norm, 3-years running), keep tabs on the fewer number of ciénaga flows (7 to 4 is normal, only 1 brief flow in 2013) and increased temperature (not yet calculated), [7] expand information distribution to six active cattle ranching neighbors, [8] continue monitoring juniper deaths (10% die-off), [9] demonstrate benefits and efficacy of "Hinge-Felling" in restoring water flow

Strategy Goals Implemented: Goal 1: Conserve and Connect Habitat, Goal 4: Support Adaptive Management, Goal 6: Increase Awarenes & Motivate Action, Goal 7: Reduce non-climate stressors.

Climate Impacts Addressed: reduced rainfall and groundwater table, infrequent ciénaga flows, increased temperature; species range expansion, plant deaths, habitat damage from increased storms

Status of Project Implementation: Ongoing installation of over 200 grade control structures as captured more than 30,000 tons of sediment, helping the ciénaga reclaim itself and reconnect surface and groundwater. Project is ongoing and began 9-years ago, 9-years of 33 same-location photo monitoring has been completed, and 7-years of piezometer data has been collected

Project Outcomes: Installed 200+ grade control structures, raised ciénaga bed 1 to 2 feet throughout the 8.6-mile reach, captured 29,000 tons of suspended sediment, raised ciénaga surface water over 13-inches, extended ciénaga reach down channel and **shortened dry period at lower wetted reach**

Funding Sources: See partners above, also collaborating and realizing financial and other habitat benefits with TNC, NMSU, WNMU, NM Land Conservancy, Peregrine Fund, NRCS CSP, BLM, Ellen Soles on piezometers, ranch received the 2013 Conservationists of the Year, American Fisheries Society, Arizona/New Mexico Chapter
We have received 14 grants totaling more than $600,000.