



The Cost of Heroism

Ecosystem heroes: Skilled ranchers and friends restore streams, soils and ranges.

Words and photos by Steven H. Rich

Paying skilled federal land ranchers for ecosystem improvement and management makes good sense. This logic parallels standard landlord/lessee practice. If lessees of land, houses or apartments make landlord-approved repairs or improvements or perform approved maintenance, they customarily get compensated. The courts have established this principle of common justice. Without getting into the fine points and legalities of federal land allotment holder/government relationships, it's reasonable to suggest that parallel compensation logic should apply. Many thoughtful experts agree.

Ranchers are producers. They know how to get things done. One rancher learned that Mexican spotted owl populations may be limited by the numbers of their favorite prey, the wood rat (pack rat). "Well, why didn't you tell me?" a rancher responded. "How many pack rats do you need and where do you want 'em?"

Mexican spotted owls prefer cool, steep,

dry canyons usually inaccessible to livestock. This progressive rancher willingly invested both effort and money to make things better for the rats and the owls.

For political reasons, agencies and academic authorities seldom acknowledge the power of managed livestock to produce rapid ecological improvement. Here are some examples:

Heroic range staffers Rich Benson and Earl McKinney of Nevada's Bureau of Land Management (BLM) Carson City District worked with ranchers Tony and Jerrie Tipton and a team of environmentalists, other agency people and academics to improve the Teal's Marsh watershed. They documented their treatments.

In 1996 the team concentrated cattle by hauling water and feeding hay and salt. They created millions of hoofprint microsites and inoculated the soil with needed microorganisms. The result was an explosion of seedlings. Three years later the area was statistically

monitored again. Native adult ricegrass had increased from 30 percent frequency to 74 percent, a 140-percent population improvement. Valuable winterfat shrubs increased 400 percent. Incredible results—particularly in a four- to six-inch rainfall zone!

Encouraged by this success, the team sought to quantify the phenomenon further using an enclosure on the Marietta Wild Burro Range. The BLM had reduced wild burro numbers from 400 in 1983 to 56 in 1988. Despite this, wild ricegrass populations and other edible shrubs continued to decline, losing half their numbers by 1999. A threshold had been crossed towards permanent degraded status.

The team divided the long-rested enclosure (which was biologically even more non-functioning than the overgrazed outside) into a control area (which was left undisturbed) and four experimental segments. The control produced no new seedlings in the experimental period.

In the first experimental plot they simply concentrated cattle, leaving dung, urine, hoof-prints and microorganisms behind. The result was the same seedling explosion they witnessed above Teal's Marsh. Seedling frequency—measured a year later as viable adults—rose 1,860 percent over the three-percent frequency pretreatment baseline.

On the next plot they added hay mulch to the former animal impacts and got a 2,000 percent increase over baseline. On plots four and five they added ricegrass seed to animal impacts and hay. This addition bumped the increase to 3,100 percent better than the rested baseline. When the team did their year-later monitoring all the rested seedlings (the three-percent baseline) had died.

Results such as these show that managed livestock indeed does have a powerful ability to reverse negative ecological trends. The experimental cattle alone reestablished the native community.

A private foundation granted the team \$600,000 toward rejuvenating the Burro Range and adjacent allotments. Federal Environmental Assessments were performed and contracts signed. Then the whole thing ground to a halt when the Carson City BLM office got new leadership. The new folks had not seen the team heal several riparian areas, restore native plants, recreate springs and extend stream flows on four allotments near Austin and Mina. Apparently they didn't believe it, despite the thorough documentation. Earl McKinney retired in disgust. Rich Benson died. They lost the \$600,000 grant. Undaunted, the dedicated Tipton/Teal's Marsh team remains determined to heal nature and spread the information.

Earl McKinney is a hero. Years ago, in the Prineville, Ore., BLM district, he and his team demonstrated that getting the grazing right and getting rid of some invading, water-sucking junipers in strategic locations could turn a seasonal storm drain into a perennial trout stream yielding 20 times the prior water. The whole flood plain and adjacent area healed into glorious abundance. The healing potential is no secret. One of Earl's BLM coworkers spent years showing the evidence to ranchers and government workers. It's in the scientific literature. There is no excuse for denying these facts.

Consider the information from Meadow Springs Ranch north of Ft. Collins, Colo., regarding research and a culminating presentation done by Dr. Roy Roath and John Kessler of Colorado State University. In 1990, when they began, the land was hurting.

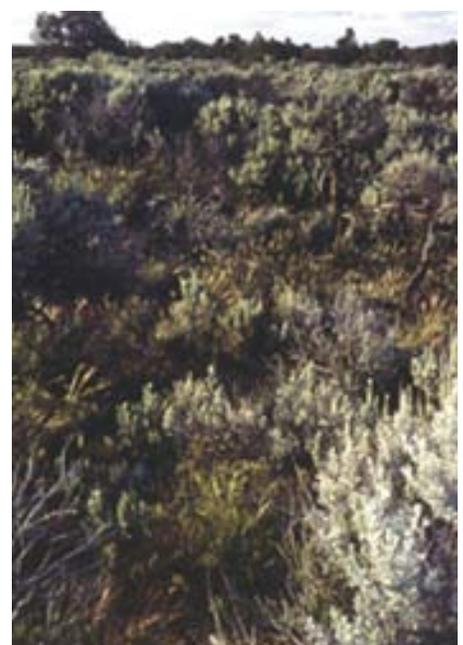


ABOVE: Clear water flows from treated slopes after intense time-controlled goat browsing in St. John's Creek near Payson, Ariz. OPPOSITE: Southeast of Globe, Ariz., spring mariposa lilies and other flowers carpet the ground next to a historic waterhole. This is a livestock concentration point. The reservoir dam is in the center of the picture.

Drainages were a monoculture of buffalo grass. What should have been creek bottoms were ephemeral mud holes that dried up in summer. Whole classes of vegetation were missing, particularly cool-season grasses. Wildlife habitat was deficient, drought vulnerable and lacking water and nutrients.

By simply changing the timing, frequency and intensity of grazing and assuring sufficient plant regrowth time, Roath and Kessler restored the native plant community. This

improved root structures, and soil cover greatly increased water infiltration and percolation. This led to restoration of perennial stream flows, resilience to droughts, more and healthier upland wildlife, a greatly restored riparian plant community, increased green season, and smiling environmentalists. Not a bad job to create three perennial streams in a small watershed during a severe drought! At present, tallgrass prairie species are moving in to this short-grass steppe ranch land.



Arizona Strip. The ungrazed pretreatment condition, left, had no grass reproduction and much bare ground with cryptocrust. On ground on right, salt and minerals briefly concentrated cattle. This led to 87 percent native grass frequency without adding seed.



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ABOVE LEFT: On mine tailings in the central Nevada desert, cattle plant seed, trample mulch, inoculate soil to replace bare ground and Russian thistle on Austin Gold Venture's tailings pond. **ABOVE RIGHT:** After treatment, only one year later, Ron Martin and Tony Tipton clip and weigh the huge growth of grass planted by cattle on the tailings pond slope.

Roath and Kessler predicted all these effects as normal responses to planned and managed defoliation by livestock. Don't even pretend all that would have happened without the livestock. The land was "in a steady state," at a depressed threshold. Livestock removal responses involve more bare ground, less healthy plants and more nonnative plant species according to research performed in a nearby valley by J.D. Maestas, Dr. Rick Knight and W.C. Gilgert (all of Colorado State University), and published in *Conservation Biology*.

The ability of livestock to transform soils is thoroughly documented at Candelaria Mine. The Tiptons preferred head-to-head

comparison between technical hydramulch plus fertilizer plus irrigation versus feeding hay to cows on the same cyanide heap leach mine spoils with the same slope and the same seed mix. The sodium absorption rate (SAR) on the spoils measured by mine staff scientists rated around 150. The technical fix, despite organic mulch, created no changes. The near-toxic soil grew very few of the seeded plants (about one every 50 yards) and a walloping load of toxic nonnative halogeton plants. Feeding hay to cows on the same sterile mess changed the SAR to three or four and grew the whole native seed mix without halogeton.

Those cow-carried microorganic inoculants really matter. Proper grazing increases

them in soils. Terry Wheeler got the same results on huge, steep mountains of old, historic mine tailings (this time pulverized and treated with acid) in Globe, Ariz. He fed hay to cows on many failed seeding efforts dating back decades. Again, the whole seed mix grew from hard seed stored in the ground. The treatment halted massive erosion and floods off the tailings that had plagued the town for generations.

I wish everyone on earth could hear Dr. Roy Roath and Dr. Jim Richardson (of North Dakota State's soil science department) talk about the implications of proper livestock management for the survival of nature and human society. We could store vastly more

BELOW LEFT: Invading Utah junipers pose a deadly fire threat to Payson, Ariz. Pat and Nancy Spurlock and their team took the initiative, bought goats to browse, and protected their neighbors while restoring native grasses. **BELOW RIGHT:** Native grass established on former bare ground near Payson, Ariz. Goat browsing let in sunlight, distributed plant nutrients, planted seeds in hoofprints.



water in soils than we ever can behind dams. It would fill rivers, streams and springs year-round. The ecological effects would be wonderfully restorative for wildlife, watersheds, fish and people. If properly executed, such a program could make money at the ranch level and cost society nothing.

Time and time again we have witnessed digestible, edible, native perennial plants replacing toxics and other nonnatives as a result of enlightened livestock management. Livestock are employed protecting cities and rangelands from wildfire. In riparian restoration New Mexico goats are employed to kill tenacious, re-sprouting, nonnative tamarisks



NEVADA PHOTO © TOMMIE C. MARTIN

and restore native grasses and sedges as well as to make a place for willows and cottonwoods.

Pat and Nancy Spurlock have spent hundreds of thousands of dollars on goats and management expenses for nothing but the privilege of protecting their Payson, Ariz., urban neighbors from an ongoing horrendous threat of deadly catastrophic wildfire. Their only reward has been the joy of seeing clear water flow in St. John's Creek and other drainages for months after a wet spell. It is obviously all they want.

Walker Lake, a marvelously unique lake in southwest Nevada, has shrunk to a third of its former size. This natural desert lake had huge Lahontan cutthroat trout, as big as Great Lakes' mackinaws. Walker Lake has no outlet. It's still alive because it's very deep and saltwater sinks below freshwater. But despite Congress spending \$300 million to save the lake, the freshwater layer is shrinking and the saltwater rising. There's not much time left for restoration.

The irony is, there's plenty of water. The problem lies in too much evaporation and transpiration on the watershed. Irrigation use is blamed, but it's not the real problem. When the watershed was healthier, farmers had to drain many Walker River-basin soils in order to farm them. There used to be too much water. The watershed has become infested



ABOVE: Ungrazed wildlife preserve soil in northeast Utah. BELOW: Across the highway, livestock and management create an abundant herbaceous layer.

LEFT: Native grass takes over a former brush/bare ground site in central Nevada as a result of briefly concentrating cattle and wildlife with salt as an attractant.



with greatly increased woody species. Multiply 30 gallons per day by 365 and then multiply that by the number of invading juniper, etc., on those Sierra slopes. Now try to find some grass between them. Livestock and management could restore the native watershed and plant communities. The cure has been demonstrated in many places. Let dedicated ranchers and federal workers do the job they're aching to do.

The Tiptons and others are ready to step up to the plate. All they're asking for is a chance. People like the folks in this article should be honored, thanked, lionized, given awards and, if there were justice, paid.

Tony and Jerrie Tipton are not wealthy ranchers. When starting out, Tony lived poor and ate beans cooked in a clay pot on cedar coals in a hole in the ground while he worked from dawn to dark. They earned every cent of the hundreds of thousands of dollars they

have poured into healing landscapes and striving to get hard-headed, self-righteous people with far less skill and experience to see some of the wonderful potentials they and others have repeatedly demonstrated. If you know anybody who loves nature as much as they do I'd like to meet them, shake hands and add them to a long list with lots of ranchers on it.

Government workers and academics have risked careers and reputations in the cause, and "greens" like Dan Dagget, Courtney White and others have demonstrated their mettle and scientific integrity. There's great injustice in what many of these folks have gone through. At the very least they deserve respect. ■

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