

Western Confluence

Summer 2016 Issue 6

NATURAL RESOURCE SCIENCE AND MANAGEMENT IN THE WEST



SUSTAINING WORKING LANDSCAPES

State of Private Lands Conservation
The Cowboy on the Bluetooth
Selling Conservation
True Value of Flood Irrigation



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Twice a year, Western Confluence magazine brings you on-the-ground, science-based stories about the interdisciplinary, collaborative solutions to our toughest natural resource challenges.

Western Confluence
Ruckelshaus Institute
University of Wyoming
804 E Fremont St
Laramie, WY 82072
(307) 766-2604
editor@westernconfluence.org



EDITOR'S NOTE

By Emilene Ostlind

I grew up in the 1990s watching the hay fields between Sheridan and Big Horn, Wyoming, sprout houses. By the time I graduated from Big Horn School, golf carts zipping over manicured greens had replaced the tractors pulling balers through waist high grass. Large houses on large lots, each with a square green lawn laid out in front of it like a door mat, squatted amidst the wildflowers and sagebrush on the slopes above Little Goose Creek.

Once largely used for farming and ranching, western private lands are transforming. Population growth, energy development, recreation and tourism, changing food markets, drought, and other factors all put pressure on open private lands. In many cases, the highest economic value for those lands comes via development. In this issue of *Western Confluence*, we explore alternatives to sprawl for private lands in the West.

Not only do private lands grow our food and fiber, and underpin the agricultural economies of rural communities, but they provide less obvious public benefits as well. They often span the creeks and rivers running through higher, drier public lands, so they shelter big game winter ranges and migration corridors, bird and fish habitat, and watersheds. They protect open spaces and sustain rural culture. About half the land in the Rocky Mountain West is privately owned, and how those private lands are managed in the coming years will shape the landscapes and character of the West.

Articles in this issue explore ways landowners are keeping their properties intact. We examine conservation easements from several angles (see pages 23-26). We learn how landowners partner with conservation organizations and wildlife agencies to create management plans that reward them for protecting wildlife, as Sarah Keller reports in "Carnivores, Not Condos" (page 11). We meet landowners who take on side jobs, even conducting business by smart phone from the saddle (see "The Cowboy on the Bluetooth," by Geoff O'Gara, page 4). Landowners lease their property for everything from telecommunication towers to fossil quarries, as Carly Fraysier explores in "The Dinosaur Keepers" (page 8). And new tools are emerging. Economists at the University of Wyoming are calculating the value to society of ecosystem services like pollinator habitat and stream flows, so that we can adequately compensate the landowners who protect those resources (see "Bee Ranching" and "The True Value of Flood Irrigation," pages 37-40).

Ultimately, at the center of the private lands management are private landowners. If we want to sustain the many benefits we get from big swaths of intact private lands, we must sustain the people who take care of those lands. Finding common ground among private, conservation, and public interests will let us support and encourage the best future land stewardship on private properties.

Cover illustration and watercolors throughout the issue by Laramie, Wyoming-based artist **June Glasson**. See more of her work at junejglasson.com.

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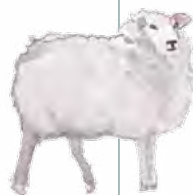
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“When Land Does Well for Its Owner, and the Owner Does Well by His Land”

An interview with the Sand County Foundation about the state of private lands conservation

By Emilene Ostlind

Among the writings of forester and conservationist Aldo Leopold is a book titled *A Sand County Almanac*, about nursing a worn-down piece of land back to ecological health and fostering an ethical relationship between people and the natural world. In the spirit of Leopold’s ideas, the national nonprofit Sand County Foundation facilitates, incentivizes, and rewards rigorous, science-based conservation efforts on private lands. *Western Confluence* spoke with Sand County Foundation President Kevin McAleese to learn what conservation on private lands looks like today and why it matters.

Western Confluence: *Why should we care whether there’s conservation on private lands?*

Kevin McAleese: If you accept that something like 70 percent of the land in the United States is privately owned, then the significance of conservation on private lands is pretty stark. It’s that 70 percent of the land that we depend on for food, clean water, wildlife, biodiversity, open space, just to name a few. If you think of the dust bowl of the 1930s, that’s a risk we can never accept again.

WC: *Who benefits from private lands conservation?*

KM: If done right the landowner and the land benefit. It was Leopold who first concluded that land health depends on active, voluntary, creative efforts of private landowners. The public also benefits through clean water, open space, wildlife habitat. On top of that, private landowners support the local tax base. They’re



Kevin McAleese

paying property tax and they support their communities and their churches and their schools.

WC: *What does Sand County Foundation mean by “conservation”?*

KM: We point back to Leopold’s own simple and powerful definition that he published in 1949. He said, “When land does well for its owner, and the

owner does well by his land; when both end up better by reason of their partnership, we have conservation, but when one or the other grows poorer we do not.”

Every time I read that the hair stands up on my neck. Think about what that quote implies. First there’s this relationship between humans and land that he describes as a “partnership.” That implies that there are things like trust and obligation flowing back and forth between people and land. And then there’s this idea of wealth and poverty as metaphors for the exchange of value between people and land. It’s just brilliant. I don’t believe there is a better definition out there.

WC: *What is the Sand County Foundation’s approach to private lands conservation?*

KM: We really do start from the perspective of the private landowner. For example, one of our commitments is we never have a meeting without

If they go out of business, that's not good for land, it's not good for their community, and it's certainly not going to help achieve conservation.

landowners at the table and often at the podium. We don't try to bring them in later once we've designed a conservation solution, but in fact, we start with their own perception of what the problems are and support their development of solutions.

Secondly, we strongly believe that conservation has to pay, and that there are economic realities that landowners face on a day-to-day basis. If they go out of business, that's not good for land, it's not good for their community, and it's certainly not going to help achieve conservation. So there is that reality check that, look, we have to find solutions that are low-cost or that can actually generate economies for landowners.

We also don't believe that regulation and government acquisition of land are better long-term solutions than empowerment of private landowners.

Lastly, as the name of Sand County Foundation implies, we believe that ethics are a real force in conservation. What we mean is that conservation, like any endeavor, is most resilient when it's engrained in the belief system of individuals and communities. Ethics is an interior force that compels people to do the right thing when no one is looking. Increasingly we hear organizations talking about markets, incentives, that kind of thing, and those are important tools. But I think we are one of few organizations that really believe that that internal impulse is essential for conservation to stick.

WC: *Who are the landowners your organization works with?*

KM: [Private landowners] have to master so many different disciplines: agronomy and animal husbandry of course, but also ecology and hydrology and engineering, construction, economics, trade, business, politics, you name it. If you look at any successful farmer or rancher, you've got a real renaissance man or woman. On top of that, they are called upon to attend countless meetings, do volunteer service, and somehow raise a family. They are so amazing and yet humble and unassuming.

I'd say the farmers and ranchers that we know love the challenges [that come with conservation work]. We know ranchers who deliberately buy the worst, good-for-nothing, junk land just for the challenge of bringing it back to health. I mean



they get their kick out of it, and they get grass growing again, they get springs running, they get birds and fish back.

WC: *How does conservation on private lands differ from conservation on public lands?*

KM: In some cases they are very similar, but there are some differences. First is the issue of vested self-interest. Leopold wrote that, "Husbandry of someone else's land is a contradiction in terms." Second is the fact that private land conservation incorporates the opportunity for creativity and self-expression on behalf of the landowner. That's much less likely to occur on public land. And third, there's quite a bit of evidence out there that conservation is more affordable on private lands.

WC: *What is the most exciting innovation for conservation on private lands you've seen?*

KM: In your neck of the woods in the livestock realm, there has been an explosion of interest in manipulating grazing patterns to achieve specific conservation and production outcomes. It's unleashed an incredible amount of creativity and experimentation. Ranchers are beginning to think more like interior designers for cattle and sheep, sometimes moving water here, moving fences there, and really getting into monitoring and data-driven management.

In the row crop sphere, farmers are beginning to move beyond soil conservation—we talked about the dust bowl—to actually deliberately increasing soil health. They are getting into the chemistry and the biology of soil itself, the microorganisms. There's all sorts of new combinations of conservation tillage, cover cropping, strange new crop rotations, managing timing of ground water through managed drainage.

In both instances, it's an innovation of intellect and a deepening of farmers' and ranchers' fundamental understanding of the natural ecological processes occurring. And it's accelerating because of the need to build more resilience into agricultural production systems to address changes in weather patterns. That's driving a lot of innovation. People can't be sloppy anymore when you have drought and wildfire and invasives and flooding and all of that.

WC: *Where do you think we will be in 25 years?*

KM: In some ways we have no choice really. We have to find a way to intensify food production to feed billions of more human beings on the existing land base that we have while continuing to protect our soil and water and biodiversity. I think people will still be looking to Aldo Leopold's insights for how we can make that happen in 25 years.



The Cowboy on the Bluetooth



*How ranchers
make ends meet
in the twenty-first century*

By Geoffrey O'Gara

From a distance, Kent Price looks like any other young rancher working cattle. He eases up into the saddle on a chill morning in Wyoming's Green River Valley, and gently wheels his horse to face the cattle bunched at the west end of the meadow below Trappers Point.

Price is part of the Green River Drift, one of the oldest, longest cattle drives in North America still done on horseback. Every year, ranches down the valley near Pinedale, Wyoming, pool their cattle and drive them high up into the Wind River Mountains. Dudes vacationing in the Pinedale area sometimes ride along on the easier stretches of the drive, which for some ranches is over 100 miles long. When the dudes see Price trotting along by himself, breath pluming, lips moving, they might well think he's just another lonesome cowboy singing to his cattle.

But Price is not singing. And though cowboying can be lonely, he's not talking to himself, either. On closer inspection, you'll notice an earpiece hooked over his right ear.

He's working the phone to sell waste-water management systems for a company out of Minnesota. Welcome to 21st century ranching.

"With technology today, that's what makes it possible to do the two things I do, the ranching and the sales work," says Price. "I can take care of almost all my emails on my phone while I'm out moving cattle. At the same time, I'm talking sales to somebody—as long as they don't mind a little mooing in the background."



Homestead Act of 1862—and fencing their property—the wealthy Cheyenne cowmen sent out hired enforcers to make life hard for the yeoman homesteaders.

The massive free-roaming herds were hard on the

range, too, until the range got hard on them: in the devastating winter of 1887, half the cattle on the Great Plains died, and many of the well-heeled owners left town.

But the open range did not transition smoothly into fenced homesteads. The small quarter-sections awarded under the Homestead Act were not sustainable spreads in the arid West. Water was scarce and the forage too thin. The rancher who grazed livestock on ranch meadows during the summer saved no hay for winter, but if he could set the herd loose on public range, he could bale the ranch hay and hoard it for the snowy months.

Initially, livestock feasted on public grass with impunity. But under the 1934 Taylor Grazing Act, the federal government began charging for livestock on public lands. Grazing districts were created, as well as common allotments like the one still used by the Green River Drift. The aim was to prevent over-grazing, but also to create a stable economic framework for western ranching. That purpose is cited still to justify what some critics consider to be unjustly low fees—currently \$2.11 per animal per month. In 2014, the fees—then just \$1.69 per animal per month—brought in \$12.1 million in revenue, while the agency spent \$34.3 million administering the grazing program. Noting that a great many western ranchers pay much higher fees for private land grazing, critics like activist George Wuerthner call the use of public land for livestock "welfare ranching."

Ranchers downplay the low

fees, note the weight of regulation that comes with federal grazing permits, and emphasize the benefits of their stewardship to public lands. Indeed, it's another way in which 21st century ranching has become a complex business, especially for those dependent on federal and state grazing leases, as so many in Wyoming are. The National Environmental Policy Act of 1970 subjected grazing permits to review for impacts on wildlife and the environment. And under the 1976 Federal Land Policy and Management Act, federal agencies must manage for "multiple use," which includes everything from wildlife habitat to ATV tracks.

So the ranchers who used to have to themselves and their cattle vast tracts of BLM and US Forest Service land, at dollar-store cost, now have to deal with protected species like grizzly bears preying on calves, bureaucrats who decide when the grass is tall enough to be chomped by domestic ungulates, and backcountry streams which have to be kept cow-pie free for backpackers to swim in them.

In most western states, you can't just retreat to private land, because with long winters and little moisture, it takes a lot of land to feed a steer, and half the land in a state like Wyoming belongs to the federal government. The typical Wyoming ranch is large in acreage—including leases of public and private grazing lands—but small in overall livestock numbers. A 2013 study in the journal *Natural Resources* found over 90 percent of the surveyed Wyoming ranches raised cow-calf

pairs, at an average of 260 pairs per ranch. The median size of the ranches was 10,128 acres, though some were much bigger.

A 2014 overview of Wyoming agriculture counted 11,700 farm and ranch operations, but thousands of these operations are miniscule, with sales of less than \$1000 a year. Less than a third of Wyoming farms and ranches had sales over \$50,000 a year. Livestock is the state's biggest agricultural product, by far, with cattle sales of \$1.1 billion in 2014, but it's still a small share of the state's gross domestic product, dwarfed by the energy industry, and, to a lesser degree, by tourism and recreation.

A 2012 report by the Wyoming Department of Administration and Information gave mining 28.4 percent of the state's GDP, while agriculture accounted for only 1.3 percent. Agriculture provides 4 percent of the state's jobs, while the "leisure and hospitality" sector is over 10 percent. Wyoming ranchers echo the agriculture community all over the country when they cite the livestock industry's role in feeding the world, or the nation, though Wyoming's ranking among states, despite the cowboy and bronc on state license plates, is only 35th nationally.

That can be a factor when public land managers balance grazing against competing uses of the commons. Ranches are not, in an economic sense, "too big to fail," so they must defend their use of public resources in other ways; for instance, as protectors of the open spaces that tourists and recreationists and wildlife advocates want, and the embodiment of cultural

values nurtured by their increasingly rare way of life. That can be a heavy



Livestock first established in Wyoming in the second half of the 19th century, when Texas ranchers started driving big herds north for the free and abundant forage on the open range. Soon Wyoming had its cattle barons, including the famed denizens of the Cheyenne Club, often foreign-born. They loosed thousands of cattle on unclaimed public lands, much of it plains and sagebrush. When settlers began making claims under the

load on horseback. Geographer Paul Starrs, author of *Let the Cowboy Ride*, calls the public land conundrum “our figurative Scarlet A, a badge variously of courage and shame and fortitude.”



It’s tempting to echo the doomsayers who have long seen ranching—particularly the family-size operations romanticized in the West—as outmoded and unfitted to the 21st century. Ranchers themselves bemoan, often with a little smile, their backbreaking, debt-ridden, money-losing enterprises far out on the margins of today’s urbanized world. But if that’s to be the theme of an essay on ranch economics, we might have picked a better time.

Because, in fact, it’s been a great decade for the beef industry. The commodity prices for steers have climbed dramatically—Oklahoma City sales of 500- to 600-pound steers in 2015 reached an unheard of \$249.92 per hundred pounds of animal, more than doubling in a decade. Lee Schulz, an agricultural economist at Iowa State University who compiled those figures, says it’s meant “historic profitability” for cow-calf operators.

In addition, while it’s not easy, the work is not nearly as hard as it was just a couple of generations ago. Equipment and technology have put ranchers at haying time in an air-conditioned cab listening to George

Strait. Technology keeps ranchers better in touch with the world outside, and allows them to monitor the range and livestock remotely when they’re away. “It’s not the babysitting job it used to be,” says Doug Miyamoto, the head of Wyoming’s Department of Agriculture. “People have a much greater desire to be engaged in community activities and socialization than they did a decade ago.”

A decade of prosperity and improving technology has quieted fears that a younger generation will disdain the hardship of life on the ranch. “It’s become more attractive, it really has,” says Jon Kirkbride, of the Harding & Kirkbride Ranch northeast of Cheyenne. “Really, there’s never been a shortage of young people wanting to come back, only now they can make a living at it.”

But Miyamoto, along with economists, historians, and ranchers themselves, warns that, for the younger generation to make a go of it, ranching today has to be more than just a bucolic life among cows and calves and steers. The past decade of cattle ranching prosperity is something of an anomaly (in fact, livestock sale prices are down substantially in 2016); going forward, successful ranchers will have to modernize, adjust and diversify, or perish.

“You’ve got to look to the future,” says Stan Flitner, “and see what’s coming down the pike. And you’ve got to move fast.”



Many ranchers have advanced formal educations, which can be useful in today’s government-regulated, paperwork-laden world. Kent Price has a

degree in mechanical engineering, and his father Charles is a nuclear engineer who once worked for the Department of Energy at the Hanford Site in Idaho. Albert Sommers, a rancher who acts as foreman for the Green River Drift cattle drive, becomes a range scientist every year when he goes out with Forest Service officials to assess the forage on the drift allotments, crucial data that drives the timing and duration of cattle on public lands. Says Sommers, “Ranchers always had an understanding of range science, only it was from the back of a horse. Now you need to be able to talk the lingo and walk the walk and prove from a study perspective what you’re doing is right.”

In addition to range science fluency, ranchers must master reams of regulatory paperwork. “You almost need to have an H.R. [human resources] person on a ranch these days,” says Jim Magagna, executive vice-president of the Wyoming Stock Growers Association. They also need to have Magagna, and others like him, to lobby and help them make their case to elected officials, who are under increasing pressure from conservationists and other public land users, some of whom carry the “cattle free” banner in public land debates.

“The ranchers have to tell their story better,” says Miyamoto of the Wyoming Department of Agriculture. “That without agriculture, wildlife habitat doesn’t exist, those open spaces don’t exist, the culture doesn’t feel the same.” Lesli Allison, executive director of the Western Landowners Alliance, finds it ironic that wildlife concerns might push livestock off public lands, when ranches’ private lands, mostly along waterways in fertile valleys, “are the most biologically productive portions of the landscape, supporting the majority of (wildlife) species.”

Without public land grazing, most ranches “can’t make a living off those lands,” adds Allison, “and they get subdivided.” And subdivisions,

everyone agrees, are much more an enemy of wildlife and open space than livestock.



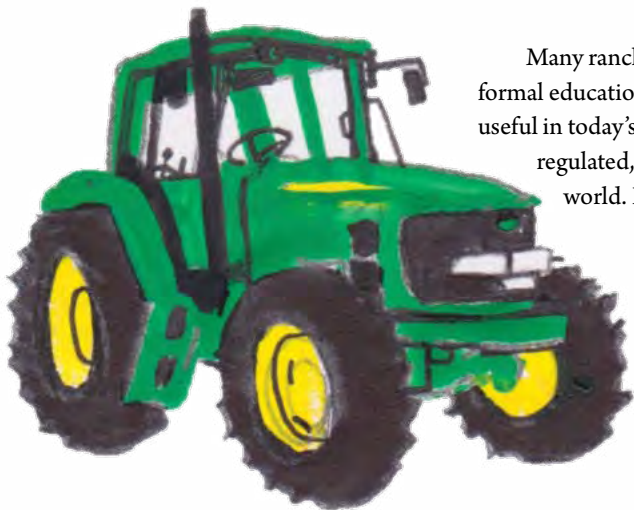
Making a living off those lands without subdividing, though, means surviving the ups and downs of beef prices at the Oklahoma City auctions, and that requires a new business acumen on the ranch. Kent Price’s sales work on horseback of waste management systems is just one of the ways that ranchers are diversifying their income streams. Some of the resources are familiar, but there are surprises, too.

“Over the years, we’ve gotten some income from oil leases,” says Jon Kirkbride, “from wind power leases, and from the dinosaur thing. There’s all sorts of leases that provide various sorts of income.”

When ranchers start thinking creatively about something other than cows and calves, they find lots of ways to monetize a ranch. But let’s start with cows and calves, because that part of the business, too, is diversifying in all sorts of ways.

Partly, that’s driven by consumers.

Shoppers at the grocery store meat counter, notes Jim Magagna of the Stock Growers, “actually ask about sustainability.” They want to know if the beef was grass-fed rather than fattened in feed lots, if antibiotics and hormones were avoided, and if the ranchers take good care of habitat, “and if you meet that test, your market enlarges.” Ranchers who once aimed primarily for quantity—big steers—can now choose markets that focus on quality. Specialty breeds, organic methods, and sustainable practices allow producers to “meet the emerging markets concerned about food health and the environment” according to research published in *Rural Sociology*. Those consumers—shopping at national chains like Whole Foods—will pay close to twice as much per pound for meat that’s label-certified to meet standards of sustainability and health. The growing appetite for “grass



fed” beef is an obvious opportunity for Wyoming ranchers, according to Magagna.

Technology, too, makes it easier for today’s rancher to diversify the customer base. Instead of the local sale barn, or the buyer who comes to the ranch, you can go on the internet and sell to buyers afar.

Of course, it’s no easy thing for a small Wyoming operator to track international markets, meet rigorous certification standards, or move nimbly enough to keep up with changing tastes. The biggest hindrance, Magagna points out, is that Wyoming lacks a federally licensed beef processing plant, which would make it simpler to assure the “purity” of Wyoming grass-feed beef. For now, beef sold out of state has to leave on the hoof, to feed lots and processing plants elsewhere.



Generating income from land besides grass for cattle—even land that homesteaders once dismissed as unproductive—may also be just a matter of identifying previously overlooked values. Cell towers need sites in the country, and they pay rent. Oil and gas and coal leases are not new phenomena, but the amounts paid for them in recent years are newly large, and have put some ranchers on easy street.

As alternative energy resources replace fossil fuels, and new technologies come into play, new opportunities arise for landowners. A number of ranches in southeast Wyoming lease to wind energy developers, while the cattle graze beneath the turbines.

Remember the dudes riding along on the Green River Drift? They came to Wyoming looking for a little more than just a placid trail ride and a pretty sunset. Miyamoto calls it “agritourism”: “People want to experience agriculture. They want to see how food is raised.” And while they may not have the skills to rope and doctor, or move a stubborn bull out of the trees, it’s a pretty sweet deal when someone

pays a rancher to work a short shift as a drive hand, rather than the other way around. Visitors are also interested in the history of ranching; Jonita Sommers, Albert Sommers’s sister, has opened a living history museum on the ranch, a popular spot for school tours. A ranch near a population center or a popular tourist destination can offer its buildings for weddings and other special events.

Tourism is a small economic niche, but a niche nevertheless. And while many full-time ranchers aren’t interested in running a bed and breakfast or a trail-ride service, outfitting hunters has a venerable place in the ranching world of the West. Guests will pay big for private hunts, either on the ranch or on adjacent public lands, using the ranch’s horses and gear and the hard-won local knowledge of where to find success. The Flitners started outfitting hunters from their ranch near Shell when they were still deep in debt, and while it didn’t create a huge income stream, Stan Flitner says, it “made the banker think, you know, this guy will do anything within reason, and do it well.”

A hunting operation encourages good stewardship of wild game around a ranch. “There’s an opportunity there for ranchers,” says Albert Sommers. “The wildlife on your place can be a resource from a perspective of hunting or a perspective of conservation.” The health of that game—the elk, the mule deer, the sage grouse, and other species—may prove even more valuable in the form of conservation easements and mitigation banks.

Jim Magagna and others call such ranches’ provision of wildlife habitat “ecosystem services.” The Nature Conservancy gets most of the press, but non-profit groups are proliferating, like the Wyoming Stock Growers Land Trust and the Green River Valley Land Trust, which purchase or accept donated easements that protect rural land and key wildlife habitat from fences, subdivisions, invasive species, and other forms of

habitat degradation.

The Sommers Grindstone Conservation Project is a prime example. It protects 19,000 acres in a key area along the Green River. For the Sommers Ranch and neighbor Maggie Miller’s Grindstone Cattle Company, it helps assure that lands remain in cattle ranching, whatever future pressures may develop. For conservationists, it protects key habitat for mule deer and sage grouse and other species. For energy companies involved in massive oil and gas development nearby, it provides a place to park some of their enormous profits and show the world—particularly state and federal regulators—that they are mitigating impacts.

Magagna and the Stockgrowers are also working to create the Wyoming Conservation Exchange, a sort of marketplace that will let energy companies “buy” conservation on ranches to offset the impacts of drilling elsewhere. Such mechanisms are at the front lines of open space conservation. A group that bought the Pathfinder Ranch is now angling to create a huge “mitigation bank” with its property along the Sweetwater and North Platte Rivers, to be paid for by energy developers. Since they came into the state to build a huge wind farm, it’s not about preserving the family ranch, but it is, potentially, an economically viable means of keeping open space away from the subdividers and preserving habitat.

“There’s been a lot of outside money coming back into agriculture,” notes Jon Kirkbride, “because the land’s been a pretty good investment, and they need to park the money.”

Older ranch families worry about newcomers, particularly “hobby” ranchers, who may deploy just enough livestock to maintain agricultural status for tax reasons, but don’t have generations of sweat equity in ranching. But Allison of the Western Landowners Alliance notes that even absentee owners “keep lands open, and create jobs, because those

landscapes have to have managers on them.”



Author Sam Western labels it “Wyoming’s deepest mythology”: the small independent rancher. But mythology is not the path to survival. In fact, there is no single path. Diversification is a long and lengthening list.

Despite economic stress, environmental concerns, and real estate pressures, ranchers in Wyoming are upbeat. They’re exploring new markets, improvements in technology and equipment, niche products, and smart ways of diversifying to derive income from open space and wildlife habitat. They’re learning as they go, and, in that sense, tradition and experience continue to matter.

“One advantage I had, and my son had, is we’ve been here for five generations,” said Stan Flitner, at the Black Tail Ranch. “I tell him, ‘I’ve made every mistake you can make, and all you have to do is look at me and listen.’ The mistakes I haven’t made, my father taught me; and his father taught him.”

The future for livestock in Wyoming looks surprisingly bright.

Geoffrey O’Gara writes and produces films from his home in Lander, Wyoming.





The Dinosaur Keepers

An unlikely crew helps a private land fossil find a good home

By Carly Fraysier

“They tend to die like an old cow in a draw,” Row Manuel says from the back seat. I’m riding shotgun next to Cliff, her husband, who points out the window and flips pages in the three-ring binder in my lap as he drives. Behind us purple and grey storm clouds swirl around the Big Horn Mountains. We’re following Shell Creek, which, as it cuts into the bedrock, takes us deeper and deeper back in time. We’re looking for dinosaurs.

Cliff and Row retired to Shell, Wyoming, Row’s birthplace, in 1987. Now they work to connect the paleontological community here. Through their non-profit, Bighorn Basin Geoscience Center, they advocate for the proper study, conservation, and display of fossils, especially those found on private land. Today, they’ve whisked me into their silver Four Runner for a tour of the hills.

We pass cows dotting winter-brown fields. The road cuts through earth that changes from bright red to salmon to orange to black. Shell is “a dinosaur wonderland,” according to Cliff. The Morrison Formation, late Jurassic sedimentary rock known for abundant dinosaur fossils, runs through here. Native American petroglyphs appear to depict dinosaur footprints. Ranchers use dinosaur bones as door stops. Elsewhere, a 20 percent complete fossil is a good find, but here many are 70 to 90 percent complete. One team of paleontologists found a *Stegosaurus* underneath a virtually complete *Apatosaurus*. Research institutions such as the Smithsonian, Dartmouth, and Iowa

State send teams of paleontologists out to fill Shell’s campgrounds, and Cliff and Row’s guest house, every summer.

When the sun begins to set, Row wants to get home to guide the wild turkeys towards their roost, her nightly ritual. “Ok, ok,” Cliff says, “we won’t go far, so you can get back to take care of your little dinosaurs.” But first, he can’t resist driving up the pass to show me evidence of geologic uplift.

In a dinosaur wonderland like Shell, as with any fossil-rich area of the West, there is no real rhyme or reason as to where in the patchwork of public and private land an important fossil might lie and thus who it belongs to. Whereas regulations protect public lands fossils, private land fossils belong to the landowners, who can do whatever they wish with the bones. Depending upon on which side of the fence a fossil is found, its fate could turn out very differently.

Private land fossils are in danger of being broken, improperly handled, sold at auction, or otherwise lost to science and the public. But Cliff and Row know another outcome is possible as well. The story of one of Shell’s most famous dinosaurs and the unlikely cast of characters who supported her along the way proves private land in Wyoming isn’t such a bad place for a fossil to be.

Anyone who wants to extract a fossil from public lands must apply for a permit under the Paleontological Resources Preservation Act of 2009. The act requires that qualified

scientists and paleontologists carefully extract, document, and study the fossil before sending it to an approved museum or repository. An especially flashy specimen (say, a *T. rex*) might be made visible to the public, but most will likely be packed up and stored, available only to professionals.

“If it’s worthy enough to excavate, it’s already got a home in a museum,” Cliff explains. “The trail of ownership starts right then.” In contrast, the fate of a fossil extracted from private land is much less certain.

In 1997, after a series of ownership disputes, a private landowner sold a *T. rex* named Sue at auction for \$8.3 million dollars, the highest amount ever paid for a fossil. According to Kelli Trujillo, a consulting paleontologist, “Sue really shook things up.”

In the wake of Sue’s sale, the fossil market boomed. Landowners dreamed about striking it rich on a good dinosaur like

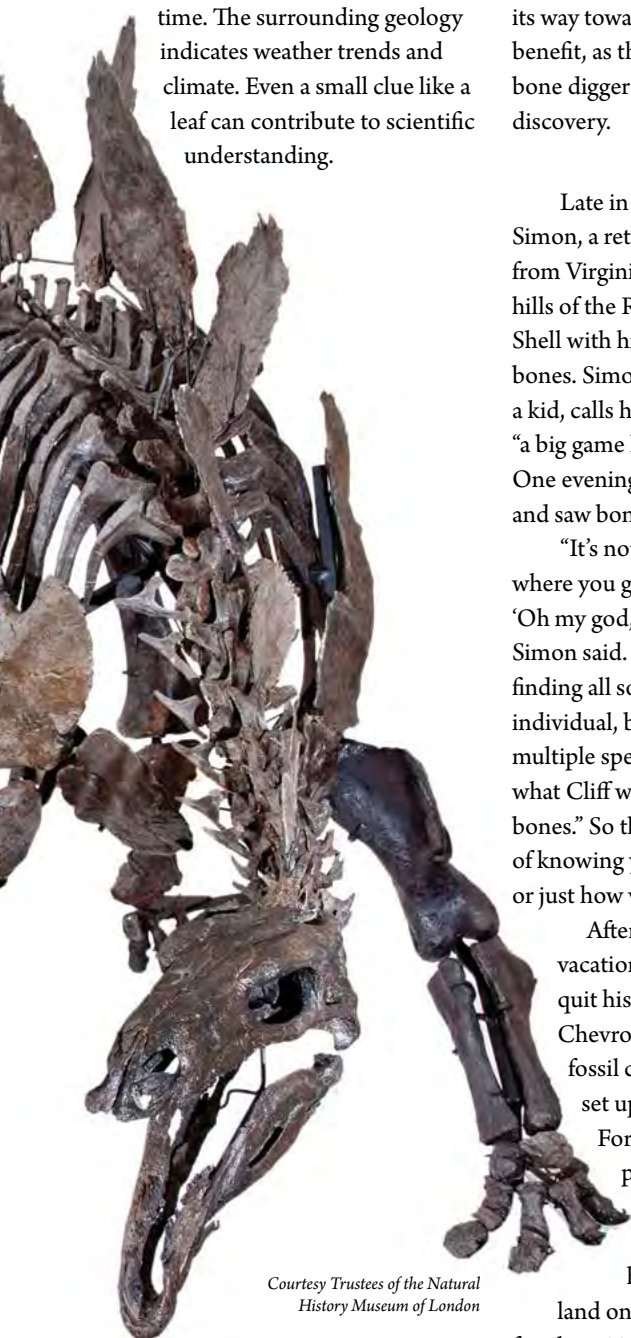
The story of one of Shell’s most famous dinosaurs and the unlikely cast of characters who supported her along the way proves private land in Wyoming isn’t such a bad place for a fossil to be.



Sue, and commercial bone collectors opened up shop on private property. For scientists and paleontologists, this was bad news.

The problems begin with excavation. “You better know how to collect them,” Row told me seriously. “Sometimes there’s three stories of dirt on bones and when you dig down it releases the pressure and they break.”

The context is also at stake during excavation. How a dinosaur rests in the ground can tell us about the ecosystem complexities at that time. The surrounding geology indicates weather trends and climate. Even a small clue like a leaf can contribute to scientific understanding.



Courtesy Trustees of the Natural History Museum of London

Then, whether the fossil goes to a private collection or public repository makes a difference. Many paleontological journals won’t publish conclusions drawn from privately held specimens, since other researchers may not have access to confirm the findings.

Cliff and Row are passionate about preserving fossils’ context. They seem to always know what’s going on at the local dig sites, and are often the first to hear of a major find. When that happens, they help the fossil find its way toward scientific and public benefit, as they did after an amateur bone digger made an important discovery.



Late in the summer of 2003, Bob Simon, a retired Chevron Geologist from Virginia, was scraping at the dry hills of the Red Canyon Ranch outside Shell with his track hoe, looking for bones. Simon, who loved dinosaurs as a kid, calls himself a dinosaur hunter, “a big game hunter without the guns.” One evening he walked up a gulley and saw bones.

“It’s not one of those things where you go out there one day and, ‘Oh my god, there’s a full dinosaur,’” Simon said. For five years he’d been finding all sorts of “disarticulated, individual, broken bones from multiple species jumbled together,” what Cliff would call “onsey twosey bones.” So that evening, he had no way of knowing yet what he’d discovered, or just how valuable it would be.

After digging fossils on a vacation in Wyoming, he’d quit his job as a geologist at Chevron to start an educational fossil company. He wanted to set up shop in the Morrison Formation, so he overlaid property maps on geology maps. “Then I began pounding on doors,” he said. He started leasing land on Red Canyon Ranch to dig fossils in 1999.



Courtesy Cliff Mammal/Geoscience Adventures

Kirby Siber encases a *Stegosaurus* bone in plaster.

“In my wildest dreams I hoped to find a dinosaur,” Simon said. He ran a pay-to-dig site where vacationers could, for a little fee, look for bones alongside him. If he deemed it scientifically insignificant, he’d let people take a bone shard or fossilized shell home. Some pieces he’d clean up and sell on his website to cover expenses, and others he’d donate to museums.

Usually he worked alone, dodging scorpions and rattlesnakes. The temperature often exceeded 100 degrees, but “it felt like spring” to Simon who was used to East Coast humidity. It was the end of the digging season when Simon found the bones sticking out of the gulley. He scraped out a “small little tail section” to take back home to Virginia, and covered the exposed patch of dirt. It would have to wait until the next year.

That winter a tropical storm came up the coast and wiped out power for ten days, forcing Simon to abandon power equipment for hand tools to pick away at the tail section. A visiting paleontologist friend suggested it might be from a *Stegosaurus*.

When Simon returned to the dig site at Red Canyon Ranch the following spring he and a volunteer



crew found tail spikes. Then back plates. Simon’s luck had turned. He did in fact have a *Stegosaurus* on his hands and he needed some help.

Cliff knew just where to find it. He calls Swiss paleontologist Kirby Siber and his crew “hellacious paleontologists,” meaning some of the best in the world. Siber and his crew had recently lost their gig digging in the Howe Quarry on private land near Shell. Cliff found them lounging around the KOA in Greybull and sent Siber to the ranch to chat with Simon. By the end of the day, the retired oilman, the Swiss digger, and the rancher worked out an agreement.

Siber had two teams of twelve experienced diggers. The dig site buzzed from sun-up to sun-down with tools and chatter. “Ninety percent of the time I couldn’t understand a thing anyone was saying,” Simon told me. German, French, and Swiss



Bob Simon at the *Stegosaurus* dig site on the Red Canyon Ranch.

contributed to the din of the dusty dig site. Some digs take years, but Siber's crew got the *Stegosaurus*, named Sarah after the rancher's daughter, out of the ground in just a month. It helped that "she was all curled up," Simon said.

Working with professional paleontologists turned out to be essential. "You have to photograph everything. You measure everything. You grid everything," Simon said. "We have videotaped a number of things for some dinosaurs. You take samples of the rocks around it because a dinosaur is just one piece of the puzzle."

The crew encased the bones and surrounding hard rock matrix in plaster and flew them to Siber's museum in Switzerland. Specialists cleaned the bones and sent them back to South Dakota where the Black Hills Institute made molds of the skeleton. You can buy a cast of Sarah through their website for \$65,000. "I'd love

to have one," Simon said, "but I can't afford it."

Sarah went into storage for a few years until her cast, on display at the 2012 Tucson Gem and Mineral show, caught the attention of the London Museum of Natural History's lead dinosaur researcher. The museum bought the real fossil—virtually complete save for a missing back plate, one front leg, and a piece of jaw—for an undisclosed price. (Cliff surmised that she probably "carried a premium," and yet likely didn't come close to Sue.) And so, from a Wyoming ranch, to Switzerland, back to the US, Sarah's fate was sealed: she made her last transoceanic voyage to her forever home. She also got a new name, Sophie, after a major benefactor's daughter.

Researchers at the London Museum of Natural History created a virtual model and computer simulation of Sophie using laser

surface scans and computerized tomography scans. She answered questions about what *Stegosaurus* ate and how they walked. Her tangerine-sized brain is bigger than the originally hypothesized walnut, but scientists maintain a belief that she was not very intelligent. Her "feeble teeth" passed large amounts of plant matter to her "huge fermentation pit" of a stomach, as described in UK newspapers. She was middle-aged and the size of a rhino when she died. Oddly, "her" sex remains unknown.

Right inside one of the London Museum's main entrances, Sophie joined Dippy the *Diplodocus* who has greeted museum goers since 1905. The curators deliberated over how to position her. "We have gone for an alert pose," a member of the museum staff said. "It's looking at something. It might have just spotted a predator." Her tiny head is turned and her tail gently flicks. Her mouth is open slightly. Red and blue lights cast a flattering light on her, mid-stride, walking across a white runway.

Simon brims with pride about his "wildest dream" dinosaur living in the London Museum. He is thrilled with her contributions to research as well as the fact that she is accessible to the public. "She found a good home," he said. Sophie mapped a blueprint for how fossils extracted from private land can benefit the local economy, science, and education.

She gets the best of both worlds: behind-the-scenes pampering and prominent display. Her contributions are twofold, too. Not only has she advanced scientific understanding, but she entertains, awes, and educates hundreds of visitors who come to the London Museum every day.

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Although Simon has been criticized for selling fossils online, the fact that he has made a couple of major fossil finds speaks to the importance of amateur diggers working on private land. And it's not just him. The recently published book *Wyoming's Dinosaur Discoveries* chronicles other private land examples with happy endings.

I asked Simon how things would have turned out differently if Sophie had been found on public land instead

of private. "She probably would have wound up in a museum but she would probably still be in storage," he started, then began again. "If she were on public land, she wouldn't have been found."

Cliff's role was important, too. His connections in the paleontology world mean he can match private lands fossils with qualified diggers, setting them on a path to a home in a museum. He and Row also lead seminars for Wyoming teachers who take advanced earth sciences education back to classrooms across the state. "There's mutual benefit for us and them," Cliff said, speaking of teachers, students, fossil hunters like Simon, the public, and even landowners. Without private land and carefully cultivated relationships, he added, "I wouldn't be doing this."

Back at Cliff and Row's house after our dinosaur drive, the two show me their fossil collection. They interrupt each other, excitedly setting one tannish lump in my hand after another: ammonite mollusk, trilobite, and the eggshell of an *Allosaurus* with little ribs embedded in the curved interior.

Cliff shows me a skull that looks like an elongated football. It's a cast of Victoria, a *Stegosaurus* found in the Howe Quarry, that Siber gifted to Cliff and Row. He's pointing out her pumpkinseed-sized teeth when we look up to see Row outside, holding a broom, walking briskly behind her flock of little dinosaurs.

Carly Fraysier is the 2015/16 Editorial Fellow at Western Confluence magazine. She is studying creative nonfiction writing and environment and natural resources at the University of Wyoming.

Cliff and Row Manuel are co-founders of the non-profit Bighorn Basin Geoscience Center and serve as coordinators and facilitators for its educational arm, Geoscience Adventures.



CARNIVORES, Not Condos

Ranches provide key
wildlife passages between
two protected ecosystems

By Sarah Jane Keller

On his ranch in Montana's Ruby Valley, Rick Sandru can load hay and enjoy views of the snowcapped Tobacco Root Mountains as geese honk overhead. "I just love Southwest Montana," he says. "It's what all of Montana used to be like. It's rural communities, friendly people, good schools, good land." To Sandru, working ranches are the foundation of all of that. "That's what people who move here to recreate enjoy. They just don't know what a fragile balance that is."

In 2010 Sandru and his neighbors felt that balance tipping when their grazing association lost 61 calves and 23 cows to wolves. Now, grizzly bears are moving into Sandru's higher-elevation summer grazing allotments. It seems like only a matter of time before they are on his land in the valley too. While he doesn't see bears as the biggest threat to his operation, he's concerned they could become one more thing that weighs against his ranch's viability. "I love all wildlife," he says. "That's one of the benefits of my lifestyle. But when you have too many predators it starts threatening your life and your livelihood."

Sandru's livelihood, and that of many other ranchers, is something conservation groups have found strong incentive to care about. The Ruby Valley and his ranch are part of a vast swath of Montana and Idaho that conservationists call the High Divide. Unlike the Greater Yellowstone Ecosystem to its east, and the Salmon-Selway's massive roadless areas to the west, the High Divide has no large protected area anchoring it. Instead, it's made up of smaller publicly owned mountain ranges, interspersed with valleys that are largely private ranch and timber lands.

But the High Divide is no less important than the two more famous ecosystems flanking it. In the last decade, scientists studying iconic species like wolverines, grizzlies, and antelope have found that working ranches are crucial travel corridors for wildlife moving between the Yellowstone ecosystem and the Northern Rockies. That recognition of how the larger ecosystem's fate is tied to that of ranches is motivating conservation groups in Montana and Idaho to work more collaboratively with ranchers.





“If we’re thinking about a multispecies connection across [the region], it can’t just be [a single valley], it has to be all of those mountain ranges, all of those intervening valleys, that have to really work together in a comprehensive or coordinated way to really make that connection between the Greater Yellowstone and the Salmon-Selway [Wilderness], and the Crown of the Continent work,” says Jeff Burrell, the Bozeman, Montana-based biologist who coordinates the Wildlife Conservation Society’s work in the Northern Rockies. “And you can’t do that without private lands.”



For a long time, biologists had a sense that the High Divide was an important travel corridor for antelope, deer, wolverines, and grizzlies. But they didn’t have much science showing how those pathways work. Since the High Divide is vast, and the coffers for funding conservation work aren’t, conservationists needed better data to justify which parcels animals need most.

In the early 2000s, Wildlife



Conservation Society biologists started putting GPS collars on wolverines and antelope to make detailed maps of their movements. Back then, biologists knew very little about basic wolverine ecology like their population sizes, their essential habitats, or how far they traveled outside of those core areas.

From a decade of study, researchers learned that the Yellowstone ecosystem’s wolverines travel quite far. In 2002 a young male wolverine, the first one ever fitted with a GPS collar, traveled from the Teton Range near Jackson Hole, Wyoming, to the Portneuf Range near Pocatello, Idaho, and back—at least 250 miles in just 19 days. The discovery that wolverines often use valley lands as stepping stones between their core mountain habitats helped confirm

the vital role of private landowners in conserving the lower 48 states’ 300 or so wolverines.

As the Wildlife Conservation Society tracked wolverines and antelope, biologists from universities and government agencies ran similar projects with grizzly bears and big game. Collectively those GPS-collaring studies yielded colorful maps showing a spider web of animal movements. Over the years, those maps have revealed which parcels of land animals are most likely to use when migrating through or dispersing across the ecosystem. For wolverines and grizzlies especially, biologists learned long-term persistence hinges on animals isolated in the Yellowstone ecosystem mixing with northern populations. That makes the ranchers in between very important land managers.

“It was the realization that there’s only a very small handful of wolverines in any one mountain range, and when the young ones take off to find their own territory and an unrelated mate they have to go across these valley bottoms,” says Bob Inman,

who ran the Wildlife Conservation Society’s wolverine research and now studies them for Montana Fish, Wildlife and Parks. “If they can’t do that, they can’t breed and remain genetically viable.”



Research showing the importance of private lands to wildlife movement and long-term population health has helped create a sense of urgency for large-scale conservation work in the High Divide. As its open spaces, public lands, and recreational opportunities have attracted more people, the High Divide has seen significant rural development. Over the last 50 years, single-family homes in the High Divide have nearly tripled, according to a 2015 report by the Bozeman, Montana-based research nonprofit Headwaters Economics. Since 2010, 63 percent of those new homes have been built outside of town, on what was once mostly agricultural and forest land.

While rural development may not look like a big intrusion to human eyes, even low-density homes can

be bad news for biodiversity. In one rural Colorado-based study, human-adapted species like European starlings and black-billed magpies took over developed ranchettes, while intact, working ranches and nature preserves both supported carnivores and less-common songbirds. Ranches also had a higher percentage of native plant species than both the ranchettes and protected areas. In a Montana study, researchers found that yellow warblers near Yellowstone National Park have less reproductive success when rural development is high. Researchers have also learned that grizzly bears are more likely to die when they are closer to roads, homes, and other development.

Some High Divide valleys already have longstanding efforts to resist trends that harm both wildlife and ranching communities. The Centennial Valley, near Yellowstone National Park's western edge, is an important passage for elk, deer, antelope, and large carnivores. It's also prime sage grouse habitat, plus one of the last places to find river-dwelling arctic grayling in the lower 48 states. Most of the valley floor is publicly owned or in the hands of multi-generation ranching families. Over the years, The Nature Conservancy, government agencies, and ranchers have worked together on conservation easements, weed control, and stream restoration. Today more than 60 percent of the Centennial Valley's private land is permanently conserved, and the valley remains largely ecologically intact.

Efforts like those in the Centennial Valley, or others to restore salmon in Idaho's Lemhi Valley, to protect rare arctic grayling in Montana's Big Hole Valley, and to place conservation easements on half of the Madison Valley's private land, are significant in their own rights. But through tracking animals fitted with GPS collars, biologists have learned that keeping the whole ecosystem intact for large carnivores and ancient ungulate migrations will require an

even more collective effort throughout the High Divide.


In 2012 the Heart of the Rockies Initiative, a partnership of 23 land trusts, led the formation of a group of called the High Divide Collaborative. The collaborative includes conservation groups, government agencies, businesses, and ranchers interested in maintaining working ranches, recreation access, and ecological connectivity. According to Heart of the Rockies' Driggs, Idaho-based executive director, Michael Whitfield, their success will hinge on listening to landowners about their needs, focusing on the common goals they share, and promising to stick around for the long haul.

In 2016 the High Divide Collaborative secured \$16 million from the Land and Water Conservation Fund to assist landowners with conservation easements and other projects on about 8,250 acres. "That sounds like a heck of a lot of money, but the reality is that it's not a lot when you think about the landscape," says Whitfield. "You have to be really strategic about what you protect." That's why Heart of the Rockies is working with state wildlife managers and other scientists to find places where easements can prevent existing migration bottlenecks from pinching shut forever. They are also modeling how wildlife movements might change with the warming climate.

While most of the High Divide easements are slated to happen in the next couple of years, the collaborative has already had success just outside the western border of Yellowstone National Park. The area, known as the Upper Henry's Fork, is important for the elk, mule deer, antelope, moose, grizzly bears, and wolverines that use private land to move in and out of Yellowstone. While conservationists have been working there for years, summer home sprawl still has potential to clog bottlenecks for wildlife movement. Amid local concern for wildlife and ranch lands,

the High Divide Collaborative is helping ten landowners secure conservation easements that will keep those corridors open.

To the conservation-minded ranchers joining the High Divide Collaborative, wildlife are reminders of their land's importance in a much larger ecosystem. Last year, Whitfield traveled to Washington, DC, with Montana rancher Erik Kalsta and Idaho rancher Merrill Beyeler to advocate for Congress' continued funding of the Land and Water Conservation Fund. Whitfield recalls how Beyeler, who is also a state representative, described the pronghorn migration through his property. "I personally see these animals moving through my ranch to their summer ranges and my family wants to be part of that, we want to be part of that bigger landscape," Beyeler told a group of legislators. "Now through the High Divide Collaborative we are connected all the way to Yellowstone."

 While easements are crucial to keeping dispersal and migration corridors open, they aren't enough on their own. The Wildlife Conservation Society's research shows that animals favor river and stream valleys for their travels. That means that all of the easements in the world aren't enough if they protect riparian areas devoid of food and cover, or if carnivores that use them are likely to tangle with livestock.

"For a long time the driving focus was keeping the subdivisions out and keeping the ranches going," says Burrell. "Now it's clear that that's necessary, but it's not really sufficient to achieve what we want to see in terms of wildlife connectivity." So as the High Divide Collaborative is working on the conservation easement front, the Wildlife Conservation



Society, and others, are working with ranchers to foster coexistence with carnivores and restore riparian habitat.

In 2004 when Mark and Jenny Sabo purchased a property on the High Divide's eastern edge, they noticed it wasn't living up to its potential as wildlife habitat. They decided to improve the creek running through their property, where the dry and naked stream bank left little food or cover for wildlife. That ranch also happened to stand out in wildlife movement models as an important thoroughfare for elk and moose. Instead of bringing in expensive excavators to restore the stream, in 2013 the Wildlife Conservation Society helped install in-stream cottonwood and willow structures that mimic beaver dams and slow down water. Meanwhile, the Sabos fenced off the riparian area and only let their cattle graze near it for short, heavily supervised, periods.

Three years into the project dense willows are returning to the creek side, game cameras and surveys are capturing more elk and amphibians on the ranch, and the Sabos have seen evidence of beaver moving in. The restoration work also yielded "tremendous gains" in the creek's late summer flows, says Burrell. That's an important selling point for ranchers, regardless of their interest in biodiversity. The Wildlife Conservation Society is now working on five similar riparian restoration projects in the High Divide.

Conserving the High Divide for

wildlife connectivity means enhancing habitat, but also making it easier for ranchers to live with animals as they move through the landscape. That can be a delicate balance, says Kris Inman, who runs the Wildlife Conservation Society's community-based conservation programs in the High Divide. Four years ago, when she switched from studying wolverines to working in High Divide communities, ranchers told her that they considered reducing carnivore conflicts to be a high priority. "There was a time where people who were impacted by recovering carnivore populations thought lethal control was the only way to deal with it," says Inman. "It's a better time now. People are more open to proactive strategies than they once were."

For instance, Sandru and his neighbors have adjusted to wolf populations expanding in southwest Montana. From his perspective, the state is now doing a better job of managing the wolves, and ranchers in his area created a livestock loss board to help compensate for cattle deaths.

Now as grizzly bears move back into the High Divide, ranchers are getting ahead of conflicts by studying what's worked well in a valley to the north, one that's also rich with agriculture and carnivores. Over 20 years ago ranchers, conservationists, and government agencies in west-central Montana formed a collaborative called the Blackfoot Challenge. Together, they've dealt with everything from wolves eating livestock to managing irrigation so the Blackfoot River doesn't run dry.

In 2003 the Blackfoot Challenge

started a program to collect and compost the cow carcasses that accumulate on ranches, largely from natural deaths during calving season. They also collect roadkill and put electric fences around beehives and calving grounds. Since removing those carnivore attractants, the valley has seen a 93 percent reduction in livestock and grizzly conflicts. Inman, along with local watershed conservation districts, her colleagues at the non-profit People and Carnivores, and Ruby and Big Hole valley ranchers, plan to have a similar carcass composting program running next year.

"Ranching and conservation go hand and hand," says Sandru, who is a leading rancher in the composting effort. In the past, he disagreed with environmental groups as they pushed for a wilderness proposal that could have harmed his grazing leases. But as Sandru chatted with the conservationists at public meetings, he learned that they had many shared values. In the end, they worked out a wilderness agreement that ranchers could live with. Inspired by that experience and his interactions with groups like the Wildlife Conservation Society, he's organizing a new alliance with conservationists in his area. Their goal is reducing litigation and speaking with a united voice on public land and wildlife management. "By having an active collaborative, I feel that's our best hope for being able to protect our way of life and maintain these open spaces, the working ranches, and the public lands that they all depend on."



Wolverines are known for being elusive mountain-dwellers, so it's a rare treat for even a biologist to see one. That's why, about five years ago, it surprised Erik Kalsta to spot one loping through his ranch's cottonwoods along the Big Hole River. "We run into a lot of animals that 'shouldn't' be here, so we suppose they're transitioning through," he says. "This is a special place for wildlife." Kalsta has been trying to keep it that way by restoring wetlands and uplands, working with biologists to

install bat boxes, and figuring out how he can manage irrigation to improve bird habitat.

Like Sandru, Kalsta thinks conservation groups are starting to do a better job of seeing ranchers as potential partners, as opposed to adversaries. "It's the carrot or the stick," he says. "If you can give someone a carrot and a hand up and work beside them, rather than regulatory punishment, you are going to get a lot farther," says Kalsta. "I think people have realized that, and I think they've come a long way."

Conservation groups are also realizing that the Northern Rockies' long-term wildlife legacy depends on those relationships with private landowners. "What we're learning about here is about far more than connecting Yellowstone to the Crown of the Continent," says Burrell. "This is going to be a model for doing conservation beyond the national park model. We're creating lots of parks and lots of reserves and wildlife species are still declining. The reason is because they are not big enough and they'll never be big enough."

"If we don't learn how to work with working lands, we're not going to do wildlife conservation."

Sarah Jane Keller is a freelance science and environmental journalist based in Bozeman, Montana. Find more of her work at sjanekeller.com.

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Rockefeller in Patagonia

Outside wealth, local values, and creating national parks

By Nathan C. Martin

Ken Burns' documentary *The National Parks: America's Best Idea* tells a story from the early years of Grand Teton National Park. The main characters are John D. Rockefeller, Jr., who purchased 30,000 acres of land in Jackson Hole to gift the federal government to expand the park; Horace Albright, Rockefeller's collaborator and a former superintendent of Yellowstone; President Franklin D. Roosevelt, who in 1943 reluctantly accepted Rockefeller's gift; and, as the narrator

describes them, "Wyoming politicians who had learned of Rockefeller's scheme [and] did everything they could to thwart his plan, not wanting Washington telling them what they could and could not do with their land." A voiceover reads from one of Albright's letters: "Dealing with Wyoming is like dealing with the Russians—you never get anywhere trying to cooperate."

But when Laurie Hinck delved into historical archives looking for news clippings, correspondence, and other documents related to

Rockefeller's role in expanding Grand Teton, the doctoral student uncovered a different story. Amidst the machinations of a New York oil tycoon and battles between politicians and bureaucrats in Cheyenne and Washington, DC, she found a whole host of people whose voices Burns' documentary omits: people for whom the proposed park was home. In short, Hinck—who was born and raised in nearby Silver Gate, Montana—found a story full of people a lot like her.



Today, Hinck runs a bed and breakfast in Silver Gate, nestled into the Absaroka Mountains at the northeast entrance to Yellowstone National Park. She left academia after receiving her PhD in 2009 and participates in local conservation discussions as a respected businesswoman. Much of the food she serves comes from nearby ranches, connecting her livelihood to the welfare of the surrounding land.

But before she departed the academy, Hinck wrote a critical examination of Rockefeller's quest

to preserve Jackson Hole as a park. *Waiting for Wilderness: The Corporate Genesis of Grand Teton National Park* details the ways in which Rockefeller attempted to steamroll Wyoming citizens who lived in the valley where the scion dreamed of crafting a pristine park. Hinck describes how Rockefeller used a dummy corporation to dupe distressed local ranchers into parting with their land for dirt-cheap prices, used crony connections in Washington to swindle federal concessionaire permits away from local businesses, and squeezed residents out of the town of Moran so he could raze what he considered aesthetically unpleasant structures—which amounted to almost the entire town.

Hinck also chronicles the decades of resistance Rockefeller faced from locals who believed a national park at the foot of the Tetons would transform their home into a sterile tourist attraction and, as one wrote, “remove Jackson Hole from the scheme of life.”

Resistance to Rockefeller came in many forms. *The Grand Teton*, a local newspaper, railed against his project. When Rockefeller tried to buy a competing paper to act as “Albright’s unofficial mouthpiece,” the owner refused. A local businessman Rockefeller hired to buy property on his behalf intentionally scuttled some of the deals. Infrastructure projects in Jackson Hole sullied Rockefeller’s vision of an unfettered wilderness. When the park opened a roadside zoo to showcase elk, moose, bison, and other local fauna, residents snuck mischievously through the night to let loose the animals from their enclosures.

The zoo alienated one of Rockefeller’s most important supporters, Olaus Murie, a nationally respected naturalist who called Jackson Hole home. Murie advocated protecting Jackson Hole from development and served on the board of the Jackson Hole Preserve, a Rockefeller organization. But he objected to treating wildlife and wilderness like a “souvenir that can



Laurie Hinck, PhD, owns the Log Cabin Cafe, a bed and breakfast in Silver Gate, Montana.

be purchased over the counter.” After the zoo’s creation he resigned from the board and grew increasingly vocal about his dissatisfaction with the way the park was taking shape.

Since most narratives about Grand Teton portray Rockefeller as a premiere conservationist, Hinck said she feels a bit awkward siding with the ranchers who obstructed his efforts. She considers herself an avowed conservationist, loves Yellowstone and Grand Teton National Parks, and makes her living from the tourists visiting the parks. But as she uncovered more and more of Rockefeller’s story, Hinck could not suppress the empathy she felt for the people who, like her, cherished the region as more than a place to visit.

“The story spoke to my heart as someone who was born and raised in Montana,” she said. “It spoke to my passion for living here and wanting to keep this place safe.”

It also struck her as a case in which a small, very wealthy and powerful cadre with romantic ideas about nature disregarded and discarded people who actually lived and worked on the land. Jackson Hole’s residents worried they would be pushed out with the expansion of Grand Teton National Park. Today, Teton County has become by some measures the richest county in the nation. Former working ranches in Jackson Hole now host summer homes for titans of Wall Street, and a housing shortage in the town of Jackson drives rents up and workers out—since 97 percent of Teton County is protected land, there is little room for new residential development. The economy has turned almost entirely to tourism supported by temporary immigrant labor. Jackson’s town ordinance requires buildings, even K-Mart, to have rustic wooden facades—an apt metaphor for

Rockefeller’s dream of the West, which prioritized appearances above all else.

“We say in my neck of the woods, ‘Please don’t let us become like Jackson. Don’t go down that road,’” Hinck said. “[In Silver Gate] we’ve always tried to look at how Jackson got the way it is, and tried to prevent that from happening to our community.”



Six thousand or so miles south of Grand Teton National Park, the lessons from Rockefeller’s foray into Jackson Hole are playing out today, at the wild southern tip of South America. For the past 20 years, Doug and Kristine Tompkins have leveraged the fortune they amassed as CEOs of clothing companies like The North Face, Patagonia, and Esprit to buy huge swaths of ranchland in Patagonia. They intend to turn the land over to the Argentine and Chilean governments, à la Rockefeller, to create national parks. Their aim is to

conserve for wildlife and tourists areas in Patagonia that have long been used for ranching.

Local opposition to the Tompkins project has been staunch. The couple has been careful to reassure their employees that the sheepherding *gauchos* marching across their property chanting about land grabs are on the wrong side of history. Until his death in December, Doug Tompkins had his employees watch the Ken Burns national parks documentary, instructing them to pay particular attention to the Rockefeller part.

Elena Louder became a kayaking guide after graduating college and found work leading trips down the Futaleufú River in northern Patagonia, on one of the premier whitewater stretches in the world. Born and raised in Twin Falls, Idaho, her job made her by default a contributor to the region's transformation into an international tourist destination. Something about the transition Louder witnessed did not sit well with her, though. When she returned to the University of Montana for graduate school in 2015, Louder determined to focus her studies on Doug and Kristine Tompkins' Patagonia national park project, and on what effect it was having on the region and its people.

"I'm at the intersection of being a tourist guide and a critical analyst," Louder said. "I work in tourism, but I also have a background in looking at resource conservation from a concerned academic perspective—all the hang-ups and injustices that are often associated with conservation."

It's easy to see how Tompkins recognized in his own undertaking the clash between Rockefeller and Wyoming's residents. Much of the land Tompkins purchased was formerly used for sheep ranching. Rather than objecting to the protection of land per se, local opposition has solidified against a wealthy foreigner imposing his imported idea of nature and threatening their distinct way of life. A campaign under the mantra *Patagonia Sin Tompkins* (Patagonia Without

Tompkins) has held marches, rallies, and other actions to protest Tompkins' plans, which Kristine Tompkins continues despite her husband's death. Residents particularly take issue with Tompkins ignoring their longstanding agrarian interests.

"You have what used to be a working landscape—there still are *campesinos* who are logging with oxen, doing a lot of animal husbandry, and growing their own food—being replaced by an economy based on tourism and services," Louder said.



In the final chapter of her dissertation, Hinck quotes Mardy

Murie, wife of the naturalist Rockefeller alienated with the roadside zoo, describing a camp she set up for Jackson Hole's warmer months: "a natural grassy opening and some convenient down logs ... Olaus built a clever kitchen-table-cupboard affair from poles ... Here was my little world for the rest of the summer ... where baby washing was rinsed and hung on bushes to dry; and sometimes a band of elk, feeding along the meadow."

Hinck explained, "Mardy made a home from the wilderness that the Rockefellers preferred to view." She said she often imagines what Grand Teton National Park might have

become if Rockefeller and Albright had taken the opinions of locals like the Muries into serious consideration.

"I know for a fact it would have been less of a visual park. Mardy would have had more of an experiential-based park, a hands-on park."

Louder said many folks in Patagonia live today as closely to the land as the Muries did. Their local knowledge could benefit the conservation process if, likewise, they were allowed meaningful input (beyond the odd gaucho receiving a job as park ranger).

"To me," Louder said, "the deep irony is that rather than looking to learn from another culture that works intimately with the landscape, [Tompkins' project] is replacing that culture with this very specific model of interacting with the landscape based on a North American-style park—one that emphasizes recreation, scenic value, consumptive value, and the production of lots and lots of images."

Louder said the Tompkins' Patagonian project stands out even among the region's long-protected parklands as a reflection of the couple's backgrounds as North American CEOs.

"There's a distinct aesthetic they've created there that's got a different feel from the two bordering Chilean-owned national parks," she said. "It really feels like a country club. You can tell that somebody designed it to a really particular taste—and the design and the way it's marketed are definitely intertwined with their corporate ethos."

It remains to be seen whether the *Patagonia Sin Tompkins* movement can be of more consequence than the locals who protested Rockefeller's actions in Jackson Hole. But this will certainly not be the last conflict between wealthy conservationists and local agrarians.

Nathan C. Martin is a freelance writer from Wyoming.



HOME AWAY FROM HOME



*How does conservation
happen when the
landowner lives
elsewhere?*

By Kristen Pope

In Texas, authorities are dealing with a rash of timber thieves sneaking onto far-flung parcels of absentee-owned lands and illegally harvesting timber. One-third of the 200,000 east Texas forest landowners live elsewhere, and many are becoming victims. In just four months, landowners reported 20 separate timber theft cases to authorities, many on absentee-owned parcels, which authorities say are often targeted because no one is there to catch the thieves.

Illegal timber harvesting not only harms the owner's economic well-

being, but it also damages the land, causing soil erosion, killing plants and animals, destroying wildlife habitat, and compacting soil, among other hazards.

The idea of conservation on private lands conjures images of family-run farms and ranches and locals who dutifully care for the land. But many people don't realize that a lot of open private land is actually owned by people who live far away.

Absentee land ownership has both positive and negative implications for conservation. While many absentee owners are



“It’s tempting to paint all absentee landowners with the same brush, but each and every one of them is different in their motivations,” says Julia Hobson Haggerty, an assistant professor of geography at Montana State University. Some absentee owners purchase land for recreation, hunting, or fishing. Others inherit a family ranch. Many buy land to develop it and resell for a profit, while others do it for investment purposes or tax havens. Still others build a second home on the land.

Tex Taylor, a professor of agricultural and applied economics at the University of Wyoming, analyzed US Census Bureau data on second homes. He found the Rocky Mountain region has nearly 600,000 “homes for seasonal, recreation, or occasional use.” Second homeownership in Wyoming grew 20 percent faster than primary residences from 2000-2010. The Rocky Mountain region as a whole has greater second homeownership than the national average of 3.5 percent: Wyoming—which has no state income tax—has 5.7 percent, Idaho has 6.2 percent, and Montana has 8 percent second homes.

These second homes, ranches, and other swaths of absentee-owned land cover a massive area. According to research from Haggerty, University of Colorado’s William Travis, and Hannah Gosnell, an associate professor of geography at Oregon State University, a quarter of the Greater Yellowstone Ecosystem’s 18 million acres are privately owned, with ranches making up the largest chunk. Pinning down exactly how much acreage belongs to absentee owners is tricky, but the researchers analyzed properties that changed hands between 1990 and 2001 and found 62 percent were sold to people who lived out of state. Many of these owners purchased the land for “amenity” values, and many live far from their parcels. The study states, “This 12-year slice of ranch sales suggests a significant ranchland

ownership transition to a new type of owner is, indeed, underway in the Rockies.” Along with this ownership transition come ecological challenges and successes.



Landowners—absentee or not—are in a position to protect, preserve, or restore the ecological characteristics of the land, with implications for their neighbors and the public. For example, they might combat invasive species, enhance wildlife habitat, protect water quality, reduce soil erosion, preserve open space, or even protect ranching culture. Such conservation activities can be a lot for any landowner to take on.

“There’s a high interest in conservation, but it’s not always really the right conservation going on,” says Peggy Petrzalka, a professor of sociology at Utah State, who has written about absentee landowners on agricultural land. “For the most part, conservation folks say active management on the land is good conservation, and that’s not occurring for some absentee and amenity landowners.”

For example, some new landowners don’t actively manage weeds on their land, believing not touching the vegetation equals good management. However, seeds from non-native invasive species can quickly spread to neighboring lands, causing problems for working ranchers and others.

Petrzalka found that absentee landowners were generally less financially dependent on their land than resident landowners. In some cases, this meant absentee owners invested more money in conservation measures. In other cases, they disregarded conservation since they weren’t as reliant on the land day-to-day.

In one study in the Midwest, Petrzalka found more female absentee landowners than male, including many elderly widows or daughters who’d inherited the land. “Women

conservation-minded, others are not or may misunderstand how to practice good conservation on their land.



Generally speaking, an absentee landowner is someone who owns land in one place, but lives most of the year somewhere else. Determining who is “absentee” versus “resident” can be complicated. Jacquelyn Chase, professor of geography and planning at California State University, Chico, found that county tax records showed up to 80 percent of private lands in her study area had absentee owners—

some properties were vacant and a few had tenants living on them. But, when she looked into the matter more closely, many supposed absentee owners of vacant parcels lived on the next parcel over. She did some ground-truthing to identify parcels where the owner did not live on or adjacent to the land, and determined only 65 percent of parcels were vacant and had absentee owners. Other studies define absentee owners as those whose primary residence is in another county or those who live in another state for more than six months of the year.

landowners lease out land more often than male landowners,” says Petrzalka. “They give that [decision-making] power to the tenant operator, so for the most part, it’s the farmer who’s renting the land who’s making the conservation decisions for what will be done or won’t be done.” Many tenant farmers only have annual contracts, which do not provide incentives for participating in long-term conservation programs.

Many people, particularly men, who own absentee parcels use their land for recreational activities such as hunting and fishing. While these activities often leave lands open and preserve scenic views, they can cause conservation problems in some situations. For example, around Yellowstone, some landowners installed private trout ponds, which are associated with a variety of negative impacts such as diverting water from streams, raising stream temperatures, and harming native fish

populations, according to Gosnell.

Hunting can also lead to problems. “Absentee owners who own the ranch for recreational amenities like hunting may have a different approach to wildlife management,” Gosnell says. “While many traditional ranchers see elk as a nuisance because they eat hay set aside for cattle, owners who are into hunting may try to attract elk onto their property, which can cause problems for neighboring ranchers when the elk wander across the property boundaries.”

Such amenity owners may not even know their actions are harmful to the land and their neighbors, since they’re less likely to have contact with local natural resource agency staff. In Chase’s study, the local fire-safe council spent a great deal of time trying to track down landowners as far away as England. With limited resources and difficulty reaching far-away landowners, such efforts detract from focusing on conservation-related



issues and providing landowners with attention and assistance. Furthermore, the lack of contact can create distrust and make owners even less likely to take advantage of conservation programs.

In some cases, those who live far away simply don’t know much about their land. Chase says of absentee landowners in California, “Often, if they’re way out of the area and not visiting, and they inherit it and have never been up here, they do not have that great of a sense of what is on it and taking care of it is hard.”

In other cases, however, absentee landowners include “conservation buyers” with the interest and money to keep large landscapes intact and ecologically functional.



“There is a significant sub-population among absentee owners who are quite committed to conservation and restoration who also have the financial and intellectual means to effect real change on the ground,” Gosnell says.

For example, Ted Turner restored native trout on his Montana ranch while Tom Brokaw switched from cattle to bison on his ranch near Yellowstone to reduce conflict with wildlife. “Bison could defend themselves better against the wolves and grizzlies, which reduced conflict and stress for him,” Gosnell says.

Other absentee owners provide ecological benefit related to the often-contentious issue of water rights. “Many absentee owners, who are not as dependent on livestock for income and don’t need to irrigate as much, have leased their water rights for instream flow,” Gosnell says. “This is a huge help for the large number

of critically de-watered streams in Montana.”

On those lands where absentee owners aren’t aware of conservation opportunities, targeting specific groups helps, according to Petrzalka. For example, messaging that emphasizes how conservation can enhance wildlife habitat may motivate absentee landowners who use their land for recreation or hunting.

Another message may appeal to female landowners. “For a lot of women landowners, passing on the land is important,” says Petrzalka. “We can take that message and talk about how passing it on in the best shape possible is important and here are ways you can do that.”

Landowners who lease their land can use another tool to promote conservation: lease provisions. According to Petrzalka, The American Farmland Trust is studying ways to work with absentee landowners to add clauses and incentives to leases to encourage good land management practices. A lease could lower rent or extend from a single year to three or more years if the tenant implements certain conservation practices.

While official outreach strategies and legalistic lease provisions promote conservation, one tried-and-true Western strategy is also helping: being neighborly. Gosnell says, “I know a lot of county extension programs in high amenity areas make a point of reaching out to newcomers.” She’s also heard of absentee owners holding cocktail parties to compare knowledge about the native species they are working to restore on their land.

As more lands change ownership in the West, finding ways to make conservation happen on absentee owned land will only become more important.

Kristen Pope is a freelance writer and editor who specializes in science and conservation topics and lives in Jackson, Wyoming. Her last story for *Western Confluence* was “National Parks Respond to Climate Change,” winter 2016. Find more of her work at kepope.com.





Ammon Medina

RAISING SHEEP IN PATAGONIA

*A way of life
suffers under
absentee
landowners*



By Ammon Medina

Rody Twyman follows a couple thousand bleating sheep on a dirt path. Brown leather boots cover his calves. His blue coat protects him from the wind. He blows a whistle to command his herding dogs right and left. They circle to keep the sheep together and move them to a new paddock to graze.

Twyman and his uncle own the ranch in the Magallanes region of Chile, about an hour north of Punta Arenas, a town on the shores of the Straights of Magellan. Twyman lives on the land and is acquainted with the small details, like how much manure on the pasture signals that it's time to move the sheep.

The fact that Twyman lives on the ranch places him in the minority. Only five to ten percent of ranch owners live

on their land in the Magallanes region. The rest live many hours away and typically come to their ranches only at the critical times, such as to oversee contract workers and ranch hands as they shear, mate, and mark the sheep. They hire managers to run the ranches in their absence.

While the owner has legal power over the land, the managers check on the sheep and manage the grazing systems every day. According to Twyman, this causes problems. "Yeah, you have to be there. If you're not there you are not going to be able to see what is going on." The managers know that the owners are not aware of what is happening day-to-day on the ranch. In many cases, this leads to a power struggle and associated problems.

Twyman, like other owners who live on their ranches, cares about the

sustainability of his pastures. Whereas he is invested in the longevity of his land, many absentee owners are interested in short-term profit. Most absentee owners purchase sheep ranches as an investment, not a livelihood. This can lead to mismanagement that erodes the sheep ranching culture and damages the environment in Patagonia.



Patricia Jarpa, a contract veterinarian, artificially inseminates sheep on the Magallanes region ranches to develop fine merino wool fibers and put more meat on the animals. As we talk, my stomach is swollen from the lamb, cooked over hot coals with just a pinch of salt, that I could not stop eating. The warm coals provide relief from the cool summer winds.



Cecilia Cavada at a wool warehouse in the Magallanes region of Chile.

“The most common problem is when the owner hires the manager, but the owner still tries to make decisions, so the workers don’t know who to listen to,” Jarpa says. This struggle may flare up if the absentee owner wants to change the grazing management, a popular choice. Absentee owners are often lured by the promise of high stocking rates, meaning increased sheep numbers, which means more wool and more meat, so more money. Not knowing the land or the feasibility of making this change, the absentee owner may implement new grazing systems as an answer to their dying pastures.

Even when the absentee owner tries to maintain paddock health, these practices require more attention and labor, a pain for the manager. In response, the manager refuses to make the change. This is happening at a ranch Jarpa works on. “The company that owns the ranch wants to apply a new management system, but the workers don’t care about that and won’t do it.”

And yes, the manager can refuse. Twyman explains, “There are ranches that have a manager ten to fifteen years, the owner comes and tells the manager, okay we are going to do

holistic management. The manager is going to say no and no and no and no. The owner doesn’t live there and the manager doesn’t want to do it. He knows that the owner is not going to fire him, because there’s nobody else. The manager owns the farm.”



Cecilia Cavada and Juan Ignacio Cavada overlook the smelly and stained clothes I wear to our meeting. I’ve come straight from tagging sheep on Twyman’s ranch. We meet in a conference room at Agropat, a small local company that brokers wool from the Magallanes region, buying locally and selling internationally. Cecilia and Juan Ignacio are siblings. Their family owns a ranch and manages a few others.

Cecilia explains that the absentee owners are really investing in the land, which is worth more than sheep. She says, “Right now, you cannot buy land and pay the interest with the profits of the sheep business.” The absentee owner can optimize all the profits from the ranch, sell the wool off at the highest price, pull a great price for their meat, sell alfalfa to neighboring ranches for supplemental feed in the winter, and still not make enough to pay for the investment.

The high cost of land can mean trouble for the sheep, as it did at Estancia Cameron. Juan Ignacio shares the story as an example of absentee ownership and management gone wrong. An investor in Santiago purchased Estancia Cameron, immediately fired everyone working on the ranch, and brought in new workers. “The crew was young and didn’t know the land,” Juan Ignacio explains. “They didn’t know which paddocks froze over and which didn’t. This led to 30,000 sheep, most of the lambs, and 800 cattle lost over the winter.”

Estancia Cameron is not the only ranch to have fired everyone when a new owner took over. But despite the lost animals, the owner will still make a profit on the investment. The land appreciates in value either way. Juan Ignacio says, “Investors are motivated to sell and that is the bottom line. At Estancia Cameron the land cost \$20 million to buy in 2010, and now the land is worth \$30 million.”



Jarpa’s fears are in this mismanagement of land. The Magallanes Region is home to 50 percent of the sheep in Chile. Jarpa shares this fact: the region used to support 2 million sheep, but in recent

years due to overgrazing, erosion, and invasive weeds following poor grazing practices, the capacity has decreased to 1.8 million sheep. Absentee owners, “just want money, now,” she says. “And I think that is wrong, because in ten years they are going to have half the sheep because the sheep won’t have pastures to graze.”

As land prices go up, fewer local owners make management decisions on the land where they live. Still, Twyman and his family have no intentions of selling their land. His great-grandfather purchased the ranch and the sheep are his passion. The money Twyman and his wife make from wool and meat each year covers their expenses. Twyman is invested in his pastures. His priority is to maintain the vegetation to ensure that plants keep growing year after year, as his great-grandfather did, so that his family’s land can support the same amount of sheep and continue to provide their livelihood.

Ammon Medina is pursuing a masters of fine arts in poetry and environment and natural resources at the University of Wyoming. He traveled to Patagonia in January 2016 with the Haub School course ENR 5890: Sustaining Temperate Drylands. He is a producer on the upcoming podcast Spoken Words.



Sorting wool in Patagonia.



Conservation Easements

An open spaces protection tool worth reforming

By Emilene Ostlind

In 2002, when Robert Hicks, owner of the *Buffalo Bulletin* newspaper in Buffalo, Wyoming, learned that the Johnson County commissioners canceled a conservation easement on a local property, he wasn't happy. And when he learned that the landowner had subdivided part of the land and put it up for sale as a home site at \$1.2 million, he was furious. The way he saw it, the previous landowner donated that conservation easement, and the public invested in it by letting the donor reduce his taxes, to keep development off a piece of open private land forever. In June 2003, he sued to have the Meadowood conservation easement put back in place.

It took almost seven years for the Meadowood case to make its way through the courts. During that time, land trusts and conservationists from coast to coast anxiously awaited the decision. The stakes were high. Should the courts agree with the landowner and commissioners that they had a right to cancel the easement, the millions of acres under similar conservation agreements across the country, and their billions of dollars of development rights, could be up for grabs. The Meadowood case is just one example of a situation in which someone tried to change or terminate a conservation easement, which is meant to be a permanent land protection tool. Depending on how courts interpret conservation easements, such cases test the ability of these instruments to actually conserve landscapes long-term.

A conservation easement is a legal agreement between a landowner and a land trust or government entity to keep houses and other development off open private lands. In some ways, it's an elegantly simple tool, true to western ideals. Conservation easements, more affordable to land trusts than buying land outright, limit sprawl while letting farmers and ranchers continue to live on and work the land. However, federal tax deductions allowed by the Treasury Department for donated easements introduce complications. A landowner who donates a permanent conservation easement can deduct its value from her taxable income. Some have abused this tax incentive, using it to reduce their taxes without advancing any conservation. Others have tried to alter or terminate conservation easements to unlock the development potential they restrict.

As times goes on, conservation easements will only face more societal and legal strains. New owners will take over conservation easement properties and put pressure on land trusts to alter the terms or even to cancel them.

More people will be tempted by the conservation easement tax incentives. And undeveloped open spaces will become increasingly valuable. While conservation easements are a popular tool, already protecting millions of acres in the United States, it's still unclear how the law will develop in response to these growing pressures.

As the courts work through conservation easement disputes like the Meadowood lawsuit, the Treasury Department is proposing reforms to curb tax deduction abuses. Whether Congress adopts those reforms, and how the courts interpret existing conservation easements, will determine whether these private lands will continue to provide open spaces and other public benefits into the future.



Under a conservation easement agreement, a landowner voluntarily gives up the right to subdivide and develop a piece of private land, usually in exchange for payment or a tax break. The landowner retains many rights to the land, including the right to farm or ranch, hunt or fish, pass the land along to kids or grandkids, sell the land, and in some cases even build a home or other structure there. The right to subdivide and develop the land transfers to a land trust or other conservation entity, which holds those development rights without exercising them. The easement holder is obligated to ensure the landowner and any other future owners of the land abide by the conservation terms of the easement forever.

Land trusts and other entities have used one version or another of conservation easements to secure the public value of open space on private lands for over a century. In the 1930s and 40s the National Park Service paid landowners to keep homes and other development off about 1,500 acres visible from the Blue Ridge Parkway in Virginia and North Carolina. In the 60s and 70s, land trusts were entering conservation agreements with landowners across the country. Since

at the time there was no overarching law governing conservation easements, each organization crafted legal documents as it went along.

In 1964, the Internal Revenue Service first gave a tax deduction for a donated easement protecting open space on private land. In 1976, Congress temporarily allowed landowners who donated a permanent conservation easement to a qualified organization to deduct its value from their federally taxable income. Then in 1980, Congress made those deductions a permanent part of the charitable giving section of the US Tax Code, and in 1986 the Treasury Department published regulations clarifying how those tax deductions were supposed to work. Reducing a landowner's taxes essentially allows the public to pay him for the public benefits his land provides, such as protection of ecosystems, open space, agricultural and forest lands, and scenic views.

In the early 80s, the whole idea of conservation easements was still relatively new and starting to gain traction, particularly on large ranches in the West. "The idea was appealing and right for the culture there," wrote Jean Hocker, founding executive director of the Jackson Hole Land Trust and president of the Land Trust Alliance from 1987 to 2001. Conservation easements provided a way to protect big, working acreages from sprawl while allowing ranchers to keep using the land. Such transactions were good for land trusts too. They cost less than a land purchase and could be negotiated on private lands that were not for sale.

Since 1980, land trusts have proliferated. Today around 1,700 of them hold conservation easements across the country. They range from tiny, volunteer-run local organizations holding a few small easements to huge national or international land trusts with multi-million-dollar budgets like the American Farmland Trust and The Conservation Fund. Of the land trusts that hold conservation easements in Wyoming, six have a strong local



or state-wide presence. That's fewer than neighboring states. The Montana Association of Land Trusts lists 12 land trust members and the Colorado Coalition of Land Trusts includes 32.

The National Conservation Easement Database reports that as of October 2015 more than 23.5 million acres in the United States (equivalent to an area slightly larger than the state of Indiana) were under conservation easement. That number probably represents less than 70 percent of actual acreage, since not all easements are recorded in the database. Thousands of conservation easement transactions take place on hundreds of thousands of acres each year in the United States. Of Wyoming's 26 million acres of private lands, over 500,000, or roughly 2 percent, are under conservation easement.

A conservation easement reduces

the value of the land it restricts, usually by about 30 to 60 percent, though some fall outside that range. So a ranch that's worth \$1 million without a conservation easement might be worth \$400,000 to \$700,000 with an easement in place, depending on the easement terms and other factors. The easement's value would be the difference, somewhere between \$300,000 and \$600,000. Determining those values is a complex process in which it's easy to make mistakes, be subjective, or even misconstrue information.

Conservation easements can be extremely valuable, though pinning down their worth is difficult. In most cases, the easement value is kept private, known only to the appraiser, the landowner, and the land trust (as well as the Internal Revenue Service if the donor claims a tax deduction).



One of Wyoming's most expensive conservation easement transactions, covering 19,000 acres of the Sommers and Grindstone ranches outside Pinedale in 2010, was worth \$19.7 million. In 2012, the IRS reports, conservation and historic preservation easements for which taxpayers claimed deductions had an average value of \$784,806. The total value of easements reported that year was just under \$1 billion.



The conservation easement on the Meadowood Ranch was pretty typical. The landowner donated it in 1993 to protect the agricultural, wildlife habitat, scenic, and other values on the land for the rest of time. He gave the easement to the Johnson County Commissioners, who a few years later created the Johnson County Scenic Preserve Trust to hold the

easement. The landowner deducted over \$1 million from his federally taxable income in exchange for the donation.

Then in 1999, the ranch sold to a new owner, and soon after that the coalbed methane boom took off in the Buffalo area. As is true of many lands around northeast Wyoming, the federal government owned the mineral rights and leased them to an energy development company, separate from the surface property. When the original landowner had created the easement nearly a decade before, he determined that the possibility of energy development on the ranch was extremely remote. Furthermore, the conservation easement terms explicitly prohibited mineral development. Suddenly a development company showed up and started drilling. Since landowners are legally required to grant access to federal minerals under their property, there was nothing the new landowners could do to stop it.

The landowners feared they would be held accountable for violations of the conservation easement as the development progressed, and they claimed expanding roads and infrastructure associated with the energy development would interfere with their agricultural production. They said they wanted to sell off a parcel of land to cover their potential lost ranching income. So they asked the county commissioners to terminate the easement on the ranch.

After several lengthy discussions, on August 6, 2002, the Johnson County commissioners agreed to cancel the easement, triggering Hicks's lawsuit. Hicks argued that to terminate the conservation easement, the landowners and county commissioners needed to prove before a judge that continuing to conserve the land had become impossible and, if that were the case, they would need to replace the easement with another one of equal value. As it turned out, the coalbed methane wells only

affected a few acres of the ranch, and they didn't strike gas, so it's unlikely the landowners could have proved that continued conservation was impossible. In that situation, Hicks wanted the conservation easement reinstated on the ranch. It would take several years for the courts to give him an answer.

The Meadowood case illustrates how conservation easements affect not only landowners and land trusts, but also the IRS, the courts, and, most importantly, the public. These private transactions are complex and ultimately very relevant to the public, which invests billions in them and benefits from their conservation outcomes. Over the years, conservation easements have come under scrutiny for all sorts of reasons, raising questions along the way about how effective they really are for protecting open spaces.



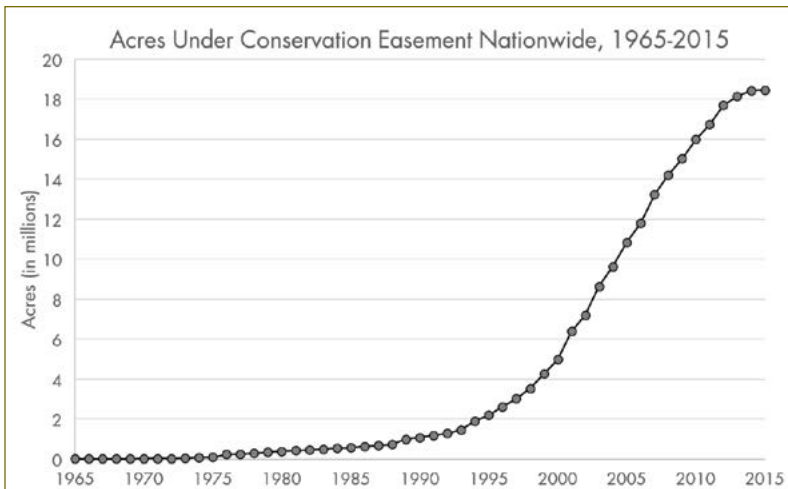
Suspensions about conservation easements flared up in 2003 after the *Washington Post* published a series of scathing articles investigating The Nature Conservancy. The articles highlighted a practice wherein the land trust would buy a property that a donor wanted, place a conservation easement on the property, and then sell the property to the board member or donor at the reduced price in exchange for a donation for the difference. The landowner received tax write-offs for the donation and the easement, and the land trust got a conservation easement. The easement agreements prohibited some types of development, but usually included the option for landowners to build luxury homes, horse barns, pools, and other desired amenities on the properties.

Following publication of the articles, The Nature Conservancy reviewed and updated its policies, and today the organization is considered by many to be the gold standard for ethical conservation easement transactions and stewardship. The organization holds more conservation

easement acreage than any other nonprofit land trust in the United States, and has helped smaller land trusts secure thousands of additional easements. But many remain skeptical of conservation easements. Other dubious uses of the tool appeared in the media through the 2000s.

One critique of the federal income tax incentive was that it benefitted high-income landowners much more than low-income landowners. In 2005, *High Country News* investigated a situation in Montana in which a developer subdivided big ranches into smaller parcels to jack up land prices, built high-end homes on some of the parcels, placed conservation easements on open areas adjacent to the home sites, and used the promise of tax deductions from future conservation easement opportunities to incentivize wealthy customers to buy in. He claimed he was stopping cheap, ugly, dense sprawl. His critics claimed he was using conservation easements to market development and working against the conservation intent of the tax deduction incentive.

Colorado has been a hotbed of conservation easement abuses, stemming in part from a unique system that allows transferable state income tax credits for conservation easement donations, in addition to the federal deductions. A landowner who donates an easement can sell the resulting state income tax credits to other taxpayers. The landowner gets cash, and the transferees receive reduced tax liability. High land values and abundant wealth in the state, as well as insufficient oversight of the conservation easement credit program, invited bad behavior. Crooked appraisers were overvaluing conservation easements. One swindler manipulated the transferable credits to steal money from Colorado taxpayers. He was sentenced this year to 83 years in prison plus \$6.9 million in penalties. In 2012, the Colorado state auditor issued a 107-page report describing conservation easement



Acres under conservation easement in the United States climbed steeply in the early 21st century and has started to flatten. (Total acreage is incomplete. Source: National Conservation Easement Database)

abuses and calling for fixes. The state has since ramped up conservation easement oversight, and is now calling on landowners to pay back millions in taxes for some 500 conservation easements overvalued in the early 2000s.



In 2006, the Treasury Department increased the federal tax incentives for conservation easement donations with the intent of attracting more low-income landowners, including farmers and ranchers. At the end of 2015, Congress made these new incentives permanent. Whereas before a donor could claim the deduction for an easement donation to the extent of only 30 percent of her federally taxable income each year for up to six years, under the new incentives, she can deduct up to 50 percent of such income for as long as 16 years. Furthermore, a donor who makes at least half of his income from agriculture in the year of the donation can claim the deduction to the extent of 100 percent of his federally taxable income for up to 16 years. This means that a landowner with valuable agricultural land and a small income who donates a conservation easement can go as long as 16 years without paying any federal income tax.

Many in the conservation community celebrated the enhanced incentives. The national Land Trust Alliance, which organizes land trusts

to develop policies and build public support for conservation, called this move “one of the most powerful conservation measures in decades.” But others have some hesitation.

“Congress just went ahead and made the incentives permanent and didn’t enact any of the proposed reforms to address abuses,” says Nancy McLaughlin, Robert W. Swenson Professor of Law at the University of Utah, who has studied, lectured on, and written extensively about conservation easements. “There are bad actors out there who are abusing the system, and now it’s going to be even more attractive for them, which unfortunately could end up tainting the whole notion of conservation easements and the tax incentive.”

Increasingly, the IRS has been cracking down on federal tax deduction abuses. McLaughlin keeps a meticulous record of legal cases in which the IRS has questioned tax deduction claims for conservation easements (as well as historic façade easements, covered by the same section of the tax code). She’s found over 80 such cases, with a spike since 2011. Most fall into two categories: qualification abuses, in which a taxpayer claims a deduction for an easement that does not actually advance any conservation measures or permanently protect the land, and valuation abuses, in which the taxpayer greatly overstates the value of the easement.

To give an example of a qualification abuse, in a case called *Atkinson v. Commissioner* decided in late 2015, two North Carolina golf course owners deducted \$7.88 million from their taxable income for conservation easements covering the courses. The IRS hired an expert from the Duke University Wetland Center to evaluate the conservation value of the golf courses. He noted, among other observations, that of the very little wildlife present on the property, the most abundant species was geese, and the golf course owners employed a border collie to chase the birds away. “The court determined that the easements did not satisfy either the habitat or open space protection conservation purposes tests of IRC § 170(h),” McLaughlin wrote, referring to the conservation easement section of the federal tax code. The golf courses had to pay back the tax deductions they’d claimed. However, “the Tax Court declined to decide whether operating a golf course is inherently inconsistent with the conservation purpose of protecting relatively natural habitat,” she added. That question is still undecided.

Boltar v. Commissioner, decided in 2011, illustrates a classic valuation abuse. A landowner claimed a nearly \$3.25 million tax deduction for a conservation easement on an eight-acre property in Lake County, Indiana. Appraisers estimated that without the easement, developers could build a 174-unit condominium project there, making the land worth \$3.34 million, or more than \$400,000 per acre. The Tax Court found this appraisal “too speculative and unreliable to be useful,” pointing out that a housing development of that size would not fit on the property, the land was not zoned for such a development, the population in the area was declining, and neighboring properties were selling for only \$12,000 per acre. The landowner was still allowed to claim a conservation easement tax deduction, only it was just \$42,400 rather than the \$3.25 million the appraisers had suggested.

Every year since 2012, the Treasury Department has proposed reforms to limit conservation easement abuses and reduce the resources going into court decisions.

“Court cases over the last decade have highlighted donors who have taken large deductions for overvalued easements and for easements that allow donors to retain significant rights or that do not further important conservation purposes,” the Treasury Department wrote this winter. “For example, large deductions taken for contributions of easements preserving recreational amenities, including golf courses, surrounded by upscale, private home sites have raised concerns both that the deduction amounts claimed for such easements are excessive, and also that the conservation easement deduction is not promoting only bona fide conservation activities, as opposed to the private interests of donors.”

The Treasury Department’s proposed reforms include creating a more rigorous definition of what qualifies an organization to accept



and hold conservation easements; requiring a detailed description of the conservation purposes and public benefit each easement is meant to provide; improving transparency by making some information about transactions publicly available, including the before and after values of the property and the restrictions imposed by the easement; and prohibiting conservation easements on golf courses.



Such proposed reforms have the potential to improve the effectiveness of what is still a relatively young legal mechanism.

“We are very much still in the grand experimental phase with regard to conservation easements,” says McLaughlin. Land trusts, which have focused mostly on acquiring new conservation easements, are now shifting toward stewarding the easements they hold. New acreage going under conservation easement increased steeply in the first decade of this century, and is now starting to flatten. While that doesn’t mean there couldn’t be another surge in

conservation easement transactions, it might indicate that the low-hanging fruit has been picked. In this new “stewardship phase,” as McLaughlin calls it, more properties under conservation easement will change ownership, more of the new owners may wish to alter the terms of or terminate the easements, and more easement interpretation and enforcement disputes may come before the courts. This is a phase in which each legal decision could ripple across the country.

The Johnson County case climbed to the Wyoming Supreme Court, where the judge told Hicks he didn’t have standing, and instead invited the state attorney general to sue on Hicks’s and the people of Wyoming’s behalf. Finally, after seven years, in February 2010, the attorney general, the landowners, and the county commissioners reached a settlement according to terms laid out by the Fourth Judicial Court in Johnson County. Under this agreement the conservation easement was reinstated, with some court-

approved modifications to clarify that the surface landowner would not be held accountable for the actions of the subsurface mineral lease holders or impacts from natural gas development. The home site hadn’t sold, so that parcel was reunited to the larger ranch.

“This is a complete victory for the citizens of Wyoming and Johnson County,” McLaughlin told the *Buffalo Bulletin* at the time. “Landowners donating conservation easements can rest easy knowing their wishes will be upheld. Taxpayers can rest easy knowing their tax dollars are being used to permanently protect land.”

The Meadowood Ranch sold again in 2011, under the name C Bar B Ranch. This winter, the Johnson County commissioners voted to transfer the conservation easement on the ranch to the Wyoming Stock Growers Agricultural Land Trust, which is better equipped to steward it. The Stock Growers Land Trust plans to hold its annual BBQ fundraiser and meeting on the property this August.

The future of private lands conservation, particularly on western ranches, depends in large part on conservation easements’ effectiveness and durability. “Land values, coupled with the uncertain ag market, are compelling these multigenerational ag producers and landowners to make very tough decisions about this land,” says Bo Alley, Executive Director of the Stock Growers Land Trust. “Conservation easements provide an option and can help keep the land intact.”

Thousands of people have donated or sold conservation easements on their land with a true conservation intent. Like the Johnson County conservation easement, most of these agreements do ultimately serve conservation purposes and provide the public benefits they were meant to. They keep private lands free from new development. They protect open views, wildlife habitat, and the rural character of landscapes. They allow landowners to keep ownership of and control over their property, continuing to raise hay and livestock or do other activities on

the land. Millions of acres remain free from housing sprawl thanks to the conservation easement tool and federal tax incentives. If conservation easements are accurately valued, used to protect land with real conservation benefits, and truly permanent, they will ensure that future generations enjoy open spaces. Though questions remain about how well conservation easements will withstand pressures on the lands they cover, the problems with conservation easements are problems worth fixing.

Further Reading

- Internal Revenue Code, 26 U.S. Code 170(h), Charitable, etc., contributions and gifts: Qualified conservation contribution.
 - Treasury Regulations, 26 CFR 1.170A-14, Qualified conservation contributions.
 - Joe Stephens and David Ottaway, “Nonprofit Sells Scenic Acreage to Allies at a Loss,” *The Washington Post* (May 6, 2003).
 - Ray Ring, “Write-off on the Range,” *High Country News* (May 30, 2005).
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 - Nancy McLaughlin, “Atkinson v. Comm’r – Golf Course Conservation Easements Not Deductible,” Nonprofit Law Prof Blog (December 11, 2015).
 - Nancy McLaughlin, “Conservation Easements and the Valuation Conundrum,” *Florida Tax Review* 19, no. 4 (2016).
 - Department of Treasury, *General Explanations of the Administration’s Fiscal Year 2017 Revenue Proposals* (February 2016): 213-216.
 - Salzburg v. Dowd, Stipulated Judgment in the District Court for the Fourth Judicial District Johnson, County, Wyoming (February 10, 2010).
- Find links to these documents at westernconfluence.org.



Conservation Easements in Wyoming

Each land trust, landowner, and conservation easement is one-of-a-kind

Courtesy Green River Valley Land Trust



RYEGRASS RANCHES: **Wildlife habitat on 15 adjacent ranch properties**

Green River Valley Land Trust
2,254 acres

Over a five-year period, 15 different landowners donated conservation easements on the Ryegrass Ranches to the Green River Valley Land Trust. These easements preserve working ranch operations as well as significant, high-quality wildlife habitat including wetlands and creek frontage home to elk, moose, mule deer, pronghorn antelope, waterfowl, and songbirds. Raptors—including bald eagles—also nest here. The conservation easement agreement stipulates all fencing must be wildlife-friendly, and allows for wildlife and fishery enhancements.

Courtesy Green River Valley Land Trust



DOUBLE BAR E RANCH: **Race to save a critical pronghorn migration corridor**

Green River Valley Land Trust
873 acres

Up to 1,000 pronghorn antelope migrate through the Double Bar E Ranch each year, and 33 endangered, threatened, rare, or special concern species use the property. The historic cow-calf operation also participates in the annual Green River Drift—one of the nation's longest running cattle drives. When the Green River Valley Land Trust had less than a year to raise \$1.2 million to purchase a conservation easement here, The Nature Conservancy, Wyoming Wildlife and Natural Resources Trust Fund, the Rocky Mountain Elk Foundation, the Tom Thorne Sage Grouse Conservation Fund, plus numerous individuals, families, and foundations all contributed.

By Kristen Pope

From verdant, low-elevation spreads in Wyoming's northeast corner to high, dry western basins, private lands across the state are diverse. Here, we survey a few recent conservation easements from all corners of the state that are just as varied as the lands they cover. Some protect working ranches and an agricultural

way of life. Others focus on open spaces and public access. Still others protect wildlife migration corridors and raptor nesting sites. The potential purposes and outcomes of conservation easements can be as different as the landowners who opt into them.

SOLDIER RIDGE: **Public hiking trail replaces development**

Sheridan Community Land Trust
1,154 acres

When 18 home sites were slated for Soldier Ridge near Sheridan, the Sheridan Community Land Trust stepped in and community leaders took action. They worked with the developer to move four developable parcels off the ridgeline toward an existing road to protect views. Then a realty company donated one conservation easement, and the Sheridan Community Land Trust raised funds to purchase an adjacent one. Today, stunning views of the Bighorns treat hikers along the four-mile Soldier Ridge Trail. In addition to providing open space and public access, this project also links valuable wildlife habitat for pronghorn, deer, and elk in two valleys.



Courtesy Sheridan Community Land Trust

MUNGER MOUNTAIN: **Linking elk to their calving area**

Jackson Hole Land Trust
771 acres (236 new, 535 previous)

Elk that winter on a feedground south of Jackson cross the Lower Snake River Ranch to reach their calving grounds on Munger Mountain in the Bridger-Teton National Forest. They cross agricultural land, in a region vulnerable to housing development, that's also important for black bears, mountain lions, mule deer, and bald eagles. Conservation began here in 1991. In 2014, a 236-acre conservation easement complemented the 535 acres already under protection. Funding for the 2014 project included a \$3 million USDA Forest Legacy Program grant and \$600,000 from the Wyoming Wildlife and Natural Resource Trust.



Courtesy Jackson Hole Land Trust/Rob Peters



SPRING GULCH: ***Still subdivision free***

Jackson Hole Land Trust
1,791 acres

With sheltered meadows, sweeping views of the Tetons, and easy access to downtown Jackson, Spring Gulch could have easily turned into a subdivision. However, over the years, local ranching families and landowners donated a number of easements, including 247 acres at Jackson Land & Cattle Equestrian Center, 507 acres at Bar BC Meadow, 447 acres surrounding the Spring Creek Ranch and Amangani developments, and 211 acres at Mead Ranch. Conservation efforts in Spring Gulch are ongoing. In 2015, a 379-acre conservation easement on the Mead Ranch further protected wildlife, agriculture, and scenic values. A Jackson Hole Land Trust capital campaign and a loan from the Bank of Jackson Hole paid for the 2015 project.



BEAR LODGE CATTLE COMPANY: ***Ranching heritage near a national monument***

Wyoming Stock Growers Agricultural Land Trust
4,921 acres

The hundreds of thousands of visitors who visit Devil's Tower each year will see open spaces, wildlife, and working cowboys into the future, thanks to Bear Lodge Cattle Company and Ogden and Zannie Driskill. A nearly 5,000-acre conservation easement will keep these working agricultural lands in production within view of the monument. Furthermore, it will protect habitat for bald and golden eagles, osprey, peregrine and prairie falcons, herons, egrets, and other wildlife. Funding from the Natural Resources Conservation Service's Farm and Ranchland Protection Program, the Wyoming Wildlife and Natural Resource Trust, and The Conservation Fund contributed to this easement.

BUCK RANCH: *Saving sage grouse*

Wyoming Stock Growers Agricultural Land Trust
2,050 acres

Buck Ranch—north of Kemmerer—was at high risk for subdivision and development thanks to excellent fishing on the Hams Fork River and lovely mountain views. While rancher Karen Buck Rennels sold the easement to keep the rangeland and hayfields in production, its key location is a boon for wildlife as well. The ranch hosts a sage grouse lek; moose, mule deer, and pronghorn habitat; and a wildlife corridor between Lake Viva Naughton and Kemmerer Reservoir. Funding came from the Natural Resources Conservation Service, Wyoming Wildlife and Natural Resource Trust, and the Wyoming Sage Grouse Campaign, a partnership between The Conservation Fund and the Knobloch Family Foundation.



Courtesy Wyoming Stock Growers Agricultural Land Trust

WEBER RANCH: *Eagle mitigation funds protect land*

The Nature Conservancy
3,802 acres

Fourth-generation ranchers Matt and Sherry Weber's land is surrounded by eagle nests—there are 69 within three miles of the property—as well as by oil and gas developments. Furthermore, the Chokecherry-Sierra Madre wind farm, slated to be the country's largest, is planned nearby. After courts required two energy companies to contribute over \$2 million to the National Fish and Wildlife Foundation to help protect golden eagles threatened by wind energy development in Wyoming, some of that money went to a conservation easement on the Weber Ranch. The easement prevents future electrical infrastructure, roads, housing, and wind development that could harm eagles. It also preserves vital winter range and a key migration area for mule deer, as well as habitat for sage-grouse, fish, and other wildlife. Additional funding came from the Wyoming Wildlife and Natural Resource Trust and The Conservation Fund.



Courtesy The Nature Conservancy



SELLING CONSERVATION

UW research reveals landowners' surprising attitudes about conservation easements

By Luke Todd

Chris Bastian grew up working on his grandparents' ranches in southeastern Wyoming every summer and thought he'd spend his life as a rancher. Instead he pursued an academic career helping farmers and ranchers. As Bastian was wrapping up his PhD at Colorado State University in 2004, conservation easements were on his mind. He'd been hearing from rural Wyoming farmers and ranchers about their fears of losing open space and working ranchlands to development.

He realized that most economic studies of conservation easements had examined the public's preferences. But Bastian was interested in the preferences of agricultural landowners, the people who actually supply easements. What motivated landowners to place easements on their land? What trade-offs did they face? What factors made a landowner more or less likely to place an easement on their land?

He designed a research project to look at conservation easements as a market with landowners as the suppliers. "I would argue nobody else had really published anything, or thought about conservation easements in this way," he said. He graduated from CSU and went to the University of Wyoming as an assistant

professor in the Agricultural and Applied Economics Department. There, he teamed up with Don McLeod, another agricultural economist who studies open space in Wyoming. In 2005, they, along with two collaborators from CSU, received a competitive grant from the US Department of Agriculture National Research Initiative to study the conservation easement market.

The team conducted focus groups with Wyoming and Colorado landowners, and using that information they designed a survey for farmers and ranchers in the region. Working with the Wyoming and Colorado Agricultural Statistics Services, they sent out nearly 5,000 surveys to people who owned at least 50 acres and took in at least \$1,000 from agricultural sales yearly. By the end of 2007, they had collected over 2,200 responses, enough from which to draw sound conclusions.

Over the following years, several of Bastian's graduate students analyzed the survey data. In the fall of 2014, I started a dual master's degree in the Department of Agricultural and Applied Economics and the Haub School of Environment and Natural Resources at UW. I gravitated towards Bastian and his work, and found he needed one last analysis of the survey data. He'd already published papers about the

survey design and some preliminary findings. My job would be to investigate landowners' preferences for conservation easements by identifying and attributing value to the factors that influence their decisions. We hoped our findings would help land trusts better partner and communicate with landowners.



The Wyoming and Colorado Landowner Survey asked landowners about their knowledge of conservation easements and land trusts, their attachment to their land and community, and how they saw their land fitting into the ecosystem. It also asked landowners to estimate the per acre value of their land, and gathered demographic information such as age, education, state of residence, gender, agricultural sales, and off-farm employment.

Of particular interest to me was a part of the survey known as a "stated choice experiment." It asked survey respondents to select from two conservation easement options with different stipulations. If they didn't like either one, they could choose "no conservation easement." The surveys showed different options for five factors: length of time of the easement, public access, wildlife habitat protection, land trust oversight, and payment the landowner would receive for putting the easement in place (as a percentage of the estimated land value). There were several different conservation easement scenarios, and each survey respondent saw two. Our aim was to understand how landowners chose easements, so we could figure out which aspects they preferred and which they cared less about.

Furthermore, we wanted to compare the stated choice responses with the landowners' estimates of their land value to put a price on what economists call "utility value." That is, we wanted to measure, in dollars, the

satisfaction that a landowner gets from the various attributes of a conservation easement. This would allow us to measure the economic importance of some aspects of conservation easements.

Fall of 2015 found me staring at the rows and columns of an Excel spreadsheet, transforming the 12,000 lines of data into usable variables, and then, with specialized statistical software, identifying the variables that best explained landowners' easement choices. After more coffee-fueled late nights than I'd like to admit, a story began to emerge.

Part of what we learned simply confirmed what may seem obvious, itself an important result. For example, we learned that landowners who knew about conservation easements were more likely to choose one than those who were unfamiliar with easements. We found that paying landowners more for a conservation easement made them more likely to accept the easement. To that extent, the agricultural landowners abided by basic economic principles. We also learned that whether the easement would protect wildlife habitat, and whether land trust approval was needed for alternative production practices didn't matter as much to landowners. On the other hand, we found that landowners strongly preferred permanent conservation easements with no public access over temporary easements or those that allowed public access.

Next we used the landowners' land value estimates to put an average dollar value on the overall satisfaction gained by placing an easement, as well as on the easement attributes that landowners found important: duration and public access.

We found that, on average, landowners in our survey gained between \$4,600 and \$105,000 worth of satisfaction by placing a conservation easement on their land. Furthermore, our analysis



showed landowners would require an average of \$32,300 more, within a range of \$7,900 to \$56,700, to place an easement that included public access on their land compared to one without. On the other hand, a landowner would only require an average of \$16,500 (ranging from \$2,400 to \$30,600) more in compensation to place a term easement instead of one in perpetuity.

We also found that landowners' sense of place and community attachment strongly affected how much they valued a conservation easement. Based on their survey responses, we placed landowners on a scale of 1 to 80, 1 being the weakest attachment to place and 80 being the strongest. We found that when a person moved one point down the scale, meaning they felt slightly less connected to their land and community, they required an average of \$663 more in payment for a conservation easement.



We hope our findings highlighting landowners' sensitivity to different aspects of conservation easements, such as control over access to the land, will help land trusts best appeal to landowners. This becomes especially important due to another surprising finding from the survey: 72 percent of the landowners chose no easement at all, no matter the stipulations.

Since we know that landowners gain satisfaction from keeping their land intact into the future, this tells us that other factors influence their decisions. We found that landowners who indicated in the survey that they "know who the land trusts are in my area and how to choose who would fit my needs best," were less likely to choose an easement. This puzzled us; we had expected people who knew land trusts to be more likely to choose an easement. However, we also found 78 percent of respondents said they did not trust the land trusts. That lack of trust may explain why so few chose an easement.

The disconnect between landowners and land trusts may be the most important finding from our research. The idea that most landowners are mistrustful, and would not choose an easement no matter the payment, presents a hurdle for land trusts. Perhaps future research can pinpoint the source of that distrust.

"Overall, we hope this knowledge will help improve the functioning of this evolving market," Bastian says. Perhaps these findings can help land trusts better understand landowners so they can build stronger partnerships for conserving open spaces and working agricultural lands.

Luke Todd earned his master of science in Agricultural and Applied Economics and Environment and Natural Resources in summer 2016.



REALTOR CONSERVATIONISTS

Anticipating residential development to protect habitat



Joe Riis

By Nicole Korfanta

Each spring, just outside the town of Pinedale, Wyoming, some 5,000 mule deer slip through a 400-meter-wide gap between a housing development and Fremont Lake. The deer pick their way past paved trails, Forest Service roads, a marina, and surprisingly, a Frisbee-golf course. They swim the lake or cross below at the outlet, then search for gaps in an eight-foot tall woven wire fence that's meant to funnel elk away from private lands but also catches deer until they figure out a way through. Scattered homes nearby create a gauntlet of yards, dogs, and paved roads. In the fall, the deer repeat the journey in reverse, and fawns learn the complicated route for the first time.

Biologists with the Wyoming Migration Initiative ranked Fremont Lake, a tight spot in the 150-mile Red Desert to Hoback mule deer migration, first on a list of threats to the corridor that deer have probably traveled for millennia. It's also a perfect place for houses. With open space on one side and town on the other, it offers views straight into the Wind River Range and easy access to city services like water and power. It is ideal for a developer targeting home buyers who want vistas and the convenience of a grocery store nearby. It was only a matter of time before this little chunk of private property would start to grow homes.

The Fremont Lake story is playing out in beautiful places across the West. Cabins and homesteads have long dotted the landscape, but the pace and breadth of population growth in the spaces between towns is something new. The Center for American Progress estimates that between 2001 and 2011, nearly 4,300 square miles of open lands were lost to development in the western US. Wyoming led eleven western states with the greatest loss of natural areas to development, at nearly five percent. West-wide, three-quarters of that loss happened on private lands, and in sparsely populated Wyoming, much of

that is attributable to growth in second homes. Rural residential development is eating away at open spaces and the wildlife populations that depend on them.

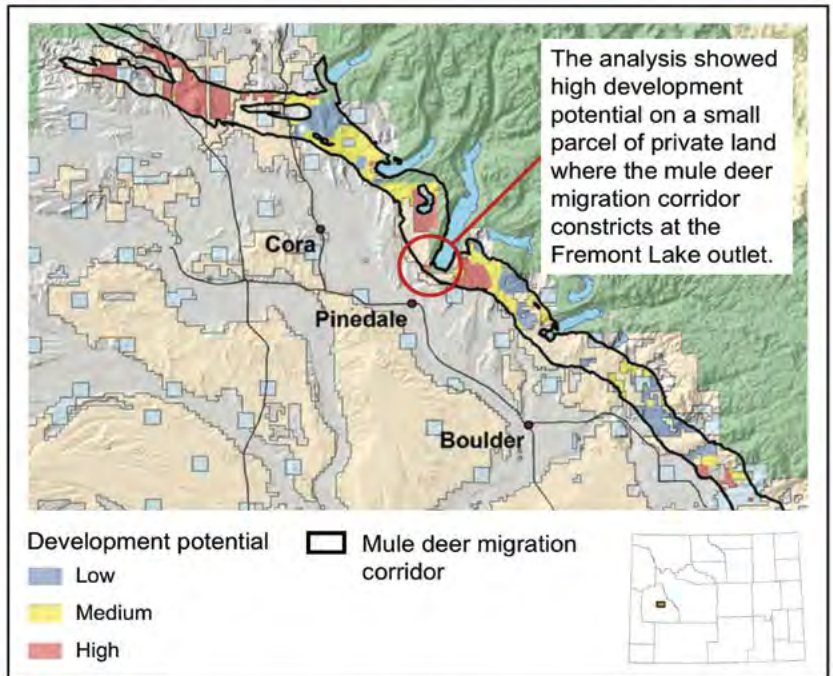
Whether to conserve agriculture or wildlife or both, land trusts are working to intervene. Using maps and models, they prioritize properties for conservation. But with booming residential development, predicting what will be lost is the first step in planning what to save. To rightly guess where the next subdivision will pop up in prime habitat, land trusts have to think like realtors.



Conservation dollars are limited, and voluntary conservation easements or outright land purchases can be expensive—millions of dollars even. To make conservation purchases efficient, land trusts might optimize conservation benefit and financial costs—maximizing one, reducing the other. But what about risk of development?

University of Wyoming researcher Benjamin Rashford and agricultural economics master's student Abigail Scott developed an approach that adds a third dimension for land trusts to consider when they evaluate prospective conservation purchases: in addition to financial cost and conservation benefit, they quantified properties' development potential.

Whether a property is developed depends on the financial situation and motivations of the property owner, which aren't always knowable. But it also depends on the property itself. The researchers determined that people are more likely to buy and develop properties close to town, roads, and recreational areas; without steep slopes; and with great views. When they analyzed these factors along the Red Desert to Hoback mule deer migration route, the Fremont Lake property popped out as one of the highest risks in terms of development potential. That lined up perfectly with the Wyoming Migration Initiative's assessment of threats to the migration.



It sounds intuitive, but unless conservation buyers explicitly consider development potential in decision making, they can make a wrong move. A land trust that considers only dollars and ecological benefit (such as acres of mule deer migration habitat) could justifiably prioritize the property with the greatest ecological benefit and the lowest cost—say, a big ranch 50 miles from town that sits in the mule deer migration corridor. But factor in development risk, and a different property comes to the forefront, in this case the small but vulnerable Fremont Lake bottleneck, which ticks all the boxes on Rashford's development threat list. A land trust could probably buy multiple conservation easements for the cost of this one small parcel. But with development potential in the mix, the calculus around conservation purchases starts to shift.

Think of it this way: If the big-but-distant ranch has very little risk of being developed, spending money to keep it open won't change the future for the deer. And using limited resources to protect that land will eat into funds the conservation buyer could put toward the Fremont Lake property when it suddenly (and very

likely according to its development potential) comes on the market.

In fact, the private land spanning the Fremont Lake outlet did go up for sale in late 2014. Because of its tremendous potential as home sites, the 364-acre property was listed for the hefty price tag of \$2.1 million. Whoever would purchase the property would seal the fate of the Fremont Lake bottleneck and its traveling mule deer.



Conservation easements are one way to protect the private lands that help safeguard migration corridors. County land use planning could also help by nudging residential development to less sensitive areas. At least in a few places, new GPS collar studies have yielded maps of corridors with known widths and lengths, well-suited for land use planning overlays. But even with great information, the risk of rural residential development in crucial wildlife habitat remains high in Wyoming. Sometimes counties must prioritize other needs over wildlife. Other times, high-priority wildlife habitat turns into a patchwork of ranchettes in spite of planning.

The Fremont Lake property was at risk of development in two ways. The Sublette County comprehensive

plan identifies the Fremont Lake property as zoned for agriculture. A developer could have requested a change to residential zoning to allow a neighborhood of homes, streets, and power lines. That would have triggered a review by the Wyoming Game and Fish Department, which increasingly considers big game migrations in their recommendations.

"I always give a lot of weight to Wyoming Game and Fish Department recommendations," says Bart Myers, Sublette County Planner. The county's comprehensive plan identifies preservation of wildlife and habitat as a priority in land use decisions. But, Myers says, even if a developer had sought approval for a subdivision on the Fremont Lake parcel, the ultimate decision resides with the county commissioners.

"I would like to think a zone change to a higher density wouldn't have been approved, but I've thought that other times. I just make a recommendation," Myers said.

There's another way the Fremont

Lake property could have become home sites. Like other agricultural lands in Wyoming, it was eligible to be broken into ten, 35-acre ranchettes without invoking regulations and planning requirements by the county or consultation between Wyoming Game and Fish biologists and county planners, like Myers. That means that migration information is unlikely to

Using factors like slope, views, and proximity to towns and roads, researchers assessed development potential on lands within a mule deer migration corridor in western Wyoming.

bear on decisions about dispersed rural development even if a county's comprehensive plan prioritizes wildlife habitat there.

The ease with which a migration corridor can become a neighborhood means that conservationists compete with developers in the race to decide the fate of such properties.



Luke Lynch, Wyoming State Director of The Conservation Fund, was a conservationist who thought like a realtor. He was aware of the Red Desert to Hoback migration assessment when the Fremont Lake property came up for sale. He knew the parcel was prime real estate for homes as well as deer.

Sparing the Fremont Lake property from development, "fell right into the strike zone for the Conservation Fund. Luke latched on to that as priority number one," said Mark Elsbree, the Conservation Fund's Senior Vice-President for Conservation Acquisition.

Lynch rallied partners to come

up with the whopping purchase price. The Knobloch Family Foundation donated over half of the necessary funds. The Conservation Fund borrowed the remaining amount and purchased the land in April 2015. With help from the Wyoming Wildlife and Natural Resources Trust, the National Fish and Wildlife Foundation, and the Wyoming Game and Fish Department, Lynch pulled together another \$400,000 to abate weeds, remove out-buildings, move the 60-year old elk fence, and convert buck-and-rail to wildlife-friendly fencing.

"The protection of the mule deer and the migration route and the open ranchlands contribute to the viability of the community," says The Conservation Fund's Mark Elsbree. "It's tremendously positive and something that Luke believed in deeply."

Just after the land purchase was finalized, Lynch and a friend died in an avalanche while backcountry skiing in Grand Teton National Park. But the Conservation Fund has shepherded his vision to fruition. In summer 2016, the organization donated the land to the Wyoming Game and Fish Department, which named the property in Lynch's honor. The Luke Lynch Wildlife Habitat Management Area is now safe from development.

The Fremont Lake property is just one bottleneck in one migration corridor for one species in one state of the West. But it illustrates the potential to avert losses elsewhere. By understanding what prompts people to build homes in certain places and not others, sprawl becomes less random, and conservation decisions are likewise more quantifiable. Together with better data on where animals migrate and when, the opportunity to protect the right places grows.

Nicole Korfanta is Associate Editor of Western Confluence magazine and Director of the Ruckelshaus Institute of Environment and Natural Resources.

Joe Reis



The elk fence on the Fremont Lake property was moved to facilitate mule deer migration.



Robert Bryans



BEE RANCHING

Paying landowners to create and connect pollinator habitat

By Kit Freedman

Bees are declining, and that's bad news for ag producers. In the United States alone, the number of honeybee colonies fell nearly 60 percent from 5.9 million in 1947 to 2.4 million in 2008. These declines are cause for concern: bees and other pollinators are a key component of biodiversity, and the pollination services they provide are essential for growing the food we eat. Indeed, all flowering plants rely on pollination to reproduce. And because these plants have co-adapted with bees and other pollinators over several millennia, without them, experts warn of parallel declines in plant species.

The exact cause of pollinator die-offs is difficult to pin down. Researchers agree that a complex interaction of disease, parasites, invasive species, and climate change is partly to blame. And changes in land use—particularly aggressive

agricultural practices that plant crops on every available acre—eliminate large swaths of wildflowers and other plants that sustain pollinators. Even if some patches of wildflowers remain, they may be too small or too far apart to support pollinators. Now a University of Wyoming agricultural economist has shown that tweaks to an existing government program could encourage farmers to better protect large stretches of pollinator habitat.

The US Department of Agriculture pays landowners to plant pollinator-friendly crops. Since 2012, the agency has enrolled over 124,000 acres in the Conservation Reserve Program's Pollinator Habitat Initiative known as CP-42. Under the voluntary program, landowners receive a one-time conservation payment to plant wildflowers and other pollinator-friendly plant species on plots where they would have otherwise planted traditional, more profitable crops that

are less enticing to pollinators.

"But the problem with this program is that a landowner who plants several isolated parcels is incentivized the same as a landowner who plants several continuous parcels," says Chian Jones-Ritten, Assistant Professor of Agricultural and Applied Economics at the University of Wyoming. Larger contiguous tracts of pollinator habitat are better for bees than smaller tracts spread across a landscape.

To address this concern, Jones-Ritten and her colleagues recently ran an experiment to test the idea that the Department of Agriculture could create bigger, more continuous tracts of pollinator habitat by offering landowners a different kind of economic bonus.

Nearly 150 participants played a computer game, which rewarded them at different levels for conserving and connecting private land parcels for pollinator habitat. The computer-

based experiment included four treatments. The first mimicked the current CP-42 conservation program and paid participants for each parcel of land they set aside. In the second treatment, participants again received a basic conservation payment for each parcel they conserved, but also earned a "spillover" bonus, equal to 5 percent of the land's production value, for the agricultural parcels immediately adjacent to the conserved parcels. Traditional crops adjacent to pollinator habitat typically have higher crop yield—the spillover benefit to the landowner.

In the third treatment, participants received the basic conservation payment for each conserved land parcel, as well as an "agglomeration" bonus, worth 10



percent of the average production value of the land, for each conserved parcel that shared a common border with another conserved parcel. Agglomeration bonuses, paid as cash by the Conservation Reserve Program, reward landowners for creating and maintaining continuous tracts of pollinator habitat across private landholdings.

In the final treatment, participants received the basic conservation payment for parcels they set aside, as well as both the spillover and agglomeration bonuses for adjacent parcels.

Perhaps not surprisingly, the participants created more well-connected “habitat” when incentivized to do so. “Their behavior was cooperative when they realized that acting cooperatively would increase their benefits,” and less so when they figured their private benefits would not increase significantly, Jones-Ritten says.

What was most surprising was how well the agglomeration bonuses worked to create continuous and well-connected tracts of pollinator habitat. Where the basic conservation payment and spillover bonus treatments achieved roughly the same number of conserved and connected pollinator habitat parcels, the two treatments that included the agglomeration bonus scheme produced nearly double the number of conserved and connected parcels.

Jones-Ritten cautions that agencies will have to determine if the money paid out through these bonuses is proportionate to the level of conservation. Still, her work does support the notion that agencies and other conservation organizations wanting to change the way landowners manage their land can incentivize the behavior they want to see.

Kit Freedman is the Project and Outreach Coordinator for the Ruckelshaus Institute of Environment and Natural Resources at the University of Wyoming. This research was supported in part by a gift from the Walton Family Foundation through the Wyoming Open Spaces Initiative.

The True



Value of Flood Irrigation

What's seen as wasteful water use has hidden benefits

By Spencer Blevins, Kristi Hansen, Ginger Paige, and Anne MacKinnon

Ranchers today in the Upper Green River Basin say they are modern-day beavers. Typically, tributaries to the Green River, fed by mountain snowmelt, surge in May and June and dwindle to nearly nothing in late summer and fall. However, as ranchers divert water out of these streams to flood fields and irrigate native hay for winter livestock fodder, the water seeps into the soil and makes its way slowly back to the streams later in the summer. That process, slowing the water as it moves downstream, mimics how beaver dams, once abundant in the area, trap water and let it seep out through the summer.

Although ranchers have long believed that flooding fields benefits wildlife through increases in late season flow, nobody had proved it. In fall of 2013, University of Wyoming Agricultural and Applied Economics master's student Spencer Blevins set out to do just that. Blevins' goal was to take a first step toward placing a dollar value on the non-agricultural benefits of flood irrigation. How much are those benefits worth to people who enjoy hunting, fishing, and birding?

Members of UW faculty involved in the Upper Green River Basin Conservation Exchange, an ongoing effort to establish a market for private investment in ecosystem services, guided Blevins' work. The exchange will pay ranchers for the ecosystem services their ranches provide. Blevins'

study was designed to determine whether the non-agricultural benefits of flood irrigation were significant enough that a conservation investor might be willing to pay for them.

Several factors could change irrigation practices in the Upper Green River Basin, with potential repercussions for stream flows throughout the summer. Some ranchers face economic incentives to subdivide their land for residential development, in which case irrigation stops altogether. Alternatively, if hay prices go up, ranchers could face economic pressure to adopt more efficient irrigation technology such as center-pivot. Sprinklers, currently not economical in this landscape, deliver water efficiently and make it worthwhile if the crop warrants the extra expense. Meanwhile, water users downstream in the Colorado River Basin are piloting programs to pay upstream irrigators to use less water or forego diversions altogether. That could provide new economic pressure to fallow lands in the Upper Green River Basin.



Blevins' study examined these three scenarios—increased residential development, increased use of center pivots, and increased fallowing—and asked how the water use and altered return flow patterns from each would affect agricultural value (revenues from growing hay minus the costs) and recreational value (tourism dollars associated with trout fishing).

His research focused on the New Fork Irrigation District in Sublette County north of Pinedale. This irrigation district is in an alluvial aquifer system where porous gravel and sand layers allow water that soaks into the land to flow underground to the streambed. This is one of the few areas in Wyoming where return flow patterns have been scientifically documented. University of California at Berkeley hydrologist Luna Leopold, who made his summer home on the New Fork Irrigation District, joined Wyoming hydrologist J. H. Wetstein to measure the district's return flows in 1989.



They determined that of the water diverted for agriculture in June and July, approximately 70 percent returns to the New Fork River, primarily later in the agricultural season when flows would otherwise be lower.

Blevins' study asked three questions in turn. First, how would land use changes affect return flow on the New Fork? Blevins used the results of the Wetstein study to estimate the effects of changing land use—pivot irrigation, residential development, and fallowing—on return flow patterns. For example, pivot irrigation results in less late-season return flow than flood irrigation because it applies less water in the first place and because plants take up more of that water.

Second, how would the altered return flow affect key species? Blevins looked at brown trout as an indicator species because Wyoming Game and Fish Department manages the New Fork as a brown trout fishery. In 1979, biologists Allen Binns and Fred Eisermann quantified the relationship between important habitat attributes, such as water

EFFECTS OF DIFFERENT LAND USES ON AGRICULTURAL AND RECREATIONAL VALUES

Scenario	Late-season flows (cubic feet per second)	Brown trout (pounds per mile)	Recreational benefits from brown trout fishing (per acre)	Net agricultural returns to producer (per acre)
Flood Irrigation	33	76	\$31	\$45
Center Pivot*	25	60	\$27	\$13
Fallow**	32	68	\$29	\$15
Residential Development	22	60	\$27	Varies

* Center-pivot scenario assumes per-acre yields of 1.5 tons and 50% subsidy on center-pivot installation. Installation costs spread over 10 years at a 6% interest rate. ** Pasture rental rate (NASS 2015).



temperature and late-season stream flows, and abundance of brown trout, measured in pounds per mile of stream.

Finally, how would changes in key species abundance affect recreational opportunities, and thus tourism revenues, in the region? Blevins could have surveyed anglers to determine how much money they spend locally on fishing trips. Rather than go to this expense, however, he used results from such studies performed elsewhere in the Intermountain West to approximate the economic impact of having more or fewer brown trout in the New Fork.

Blevins also calculated net profit (revenues minus costs) to the private landowner from each of the four land uses.

Blevins found that agricultural value is highest under the flood irrigation scenario. Ranchers who

keep the land in agriculture get the best deal economically by continuing flood irrigation. Native hay yield would have to increase to approximately 1.5 tons per acre—an unlikely 50 percent increase—to give ranchers the necessary economic incentive to switch to center pivot (based on an assumption that to install a pivot system, ranchers would require a 50 percent subsidy, available in the northern Rocky Mountains). Alternatively, downstream water users would have to pay ranchers at least \$30 per acre, according to Blevins' analysis, to incentivize them to fallow acres and stop irrigating altogether. Meanwhile, residential development remains a temptation: on some properties, the economic incentives for residential development outweigh those for keeping land in agriculture. Conservation easements cover a few properties in the area, precluding residential development, but other properties could be converted to rural housing.

The most important result from the analysis was that recreational value is also highest under the flood irrigation scenario. People who want to keep trout streams healthy in the Upper Green area might be willing to pay ranchers to keep flood irrigating. Such an incentive could become necessary if demand for residential development is strong.

Blevins conducted this analysis using simple calculations in an Excel spreadsheet. The numbers should not be interpreted as universally accurate estimates for each acre on the New Fork. Rather, Blevins' research is a thought piece, laying out a framework for how one might go about translating changes in late-season flows to dollar values.

The list of additional considerations associated with these results is long. For example, Blevins' study quantifies the recreational values associated with late-season flows only for brown trout, leaving out benefits to other riparian wildlife. More research

would be required to quantify results for other bird and fish species.

There is a great deal to be learned from this study nonetheless. Blevins has shown that the non-agricultural benefits of flood irrigating are potentially quite significant and comparable in magnitude to revenues from alternative land uses. If managers or conservation groups find a way to compensate private landowners for the full benefits their flood irrigation provides, it could affect their future land use decisions. "Wasteful" flood irrigation is not so wasteful after all, at least in a mountain valley with alluvial soils such as the New Fork, and in fact helps everyone from ranchers to trout to fishing guides, in unexpected ways.

Spencer Blevins is a former graduate student and **Kristi Hansen** is Associate Professor in the Department of Agricultural and Applied Economics, **Ginger Paige** is Associate Professor in the Department of Ecosystem Science and Management, and **Anne MacKinnon** is Adjunct Professor in the Haub School of the Environment, all at the University of Wyoming. This research was supported in part by the Walton Family Foundation through the Ruckelshaus Institute's Western Water Initiative.

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Measuring Rain, Snow, and Hail

An international volunteer network bests the fanciest technologies

By Emilene Ostlind

The second week of September 2013, rain pummeled Cheyenne, Wyoming. According to the National Weather Service, six inches came down. But NWS data didn't show how, just a few miles to the south, only three inches fell. That information came not from sophisticated computerized sensors as one might expect of weather monitoring, but from a much simpler source.

Rainfall data has all sorts of applications, from calculating crop insurance to planning storm water drains to issuing drought and flood warnings and more. But it's tricky to collect. Much precipitation data comes from NWS stations, located about one every 25 miles across the country. In Wyoming the NWS station grid is uneven, with gaps of more than 100 miles in some places. The NWS stations are a "fantastic, wonderful source of information, until you need to know what's happening locally," said Nolan Doesken, Colorado State Climatologist.

Automated precipitation gauges that gather and store rainfall information on a computer chip without any human oversight, might seem like an easy way to fill in those holes in the map, but "Automated gauges are horrible," especially in stormy or freezing conditions, said Tony Bergantino of the Wyoming State Climate Office. Except for the most expensive ones, they are notoriously inaccurate. NOAA maintains a network of high-end automated precipitation gauges, but not only are they sparse (only three in Wyoming), they cost upwards of \$50,000 each, with thousands more in maintenance each year.

"An interested human being with a simple plastic rain gauge can do better than an automated device," added Doesken. That's how he came up with a clever solution to the local precipitation data shortage.

In 1997, after severe flooding killed five people in Fort Collins, he knew communities needed better local rainfall data. So he found a simple, inexpensive, and reliable rain gauge; trained volunteers to use it; and developed a database where users could upload measurements via phone or the web. When a volunteer entered data for the day, the point appeared on a map online, visible to everyone. He called it the Community Collaborative Rain, Hail, and Snow Network or CoCoRaHS (pronounced KO-ko-rozz).

"People like entering data and seeing it in spatial context. If we hadn't done that, it wouldn't have caught on," Doesken said. "And neither would we have been as enthused, because we immediately saw how precipitation for a given storm varied more than we ever thought."

Over the following decade, with help from volunteers, state and federal climate agencies, and a few big grants, the network expanded. A weather forecaster and CoCoRaHS volunteer in Colorado pitched in by writing code that would send an alarm to

the appropriate NWS office, based on location, should anyone report especially heavy precipitation.

"When the Weather Service offices could get that alarm, everybody wanted it," Doesken said. "We hardly had to do anything. They were begging us to spread it to new areas." By the end of 2009, all fifty states had joined.

"We had no intention whatsoever of building a national or international network," Doesken said. But CoCoRaHS continues to grow, spanning Canada, Guam, Puerto Rico, and the Virgin Islands. "Our first volunteer from the Bahamas signed up today," he said earlier this year.

Volunteers typically upload around 11,000 points each morning. Anyone can go to the CoCoRaHS website any day of the year and see a precipitation map of North America or comb through the data archives. Did the hail outside your office window also batter your garden at home? Zoom in on your town to find out. And better yet, anyone in Wyoming can get a big, clear plastic CoCoRaHS rain gauge from the State Climate Office for free and start contributing to the network.



It takes about two minutes each morning to read the gauge and upload the data.

Not only does CoCoRaHS contribute valuable precipitation data (NWS is one of many organizations that now rely on it), but it also helps volunteers better understand their local climate. "There's something about seeing water in the gauge," Doesken said. Cities support the program because they've found people waste less water when they see firsthand how little falls from the sky.

Over 325 volunteers participated in Wyoming last year, adding much needed data to that from the National Weather Service stations in the state. Still, the challenge remains to recruit citizen data collectors to the network. What's the target number of participants in Wyoming? "Five hundred thousand would be ideal," said Bergantino.



How to become a citizen precipitation scientist

1. Sign up as a CoCoRaHS volunteer at cocorahs.org/application.aspx
2. Get a CoCoRaHS rain gauge
In Wyoming, contact the State Climate Office office for a free gauge at wrcs@uwyo.edu or (307) 766-6651
3. Read the training manual at bit.ly/CoCoRaHS-Wyo
4. Check your rain gauge each morning and upload your data online
5. See your data point on the map

The Landowner Must Yield

A 100-year-old homestead act gives energy developers access to private lands

By Tara Righetti

Just south of where the Little Snake River meanders along the Colorado-Wyoming border, silvery green sagebrush and mountain scrub grow above a fortune of hydrocarbons. An estimated 9.9 trillion cubic feet of natural gas is buried in a reservoir 8,000 feet below. Part of that reservoir sits beneath Roger Stull's land, where he enjoys a quiet ranching life. But that quiet is about to be disrupted by energy development—not to produce the gas below Stull's property, but to access gas below public lands miles away. As a recent court case affirms, landowners throughout the West could see expanding infrastructure on their properties for energy production on nearby public lands.

The gnarled fence posts that stipple the landscape only hint at the fragmented property ownership in this area. Ranchers own much of the surface, and the federal government owns most of the valuable subsurface resources. Such "split estates" exist on nearly 58 million acres, mostly in the western United States.

Split estates are the progeny of laws, including the Stock Raising Homestead Act of 1916, that enticed pioneers west with the promise of free land. Unlike prior land disposal laws, the Stock Raising Homestead

Act divided the property: the federal government retained the underground minerals while granting homesteaders "strictly the surface of the land." The purpose, according to Congress, was "to reserve to the United States the ownership and right to dispose of all minerals underlying the surface." The government could sell, lease, use, manage, regulate, or otherwise "dispose" of the minerals, and could access the surface to extract them. Those rights still exist today, although the methods and scale of mineral development are nearly unrecognizable from a century ago.



The story of Stull's ranch begins in 1923. That December, the US Land Office granted Robert B. Adams' petition to homestead a small parcel in the Little Snake River Valley. Adams wrote:

There is just sufficient land that can be cultivated to raise forage crops to feed the stock during the long winter months. The most of the land is suitable only for grazing purposes ... It will make excellent pasture but is valueless for any other purpose.

For the first 75 years after Adams received his land, the minerals were mostly untouched. Then in 1999 the Bureau of Land Management, which handles federal minerals, consolidated nearly 40 square miles of oil and gas leases, including those under Adams' homestead, now owned by Stull. Authorized by the Mineral Leasing Act, such unitization is one of the many ways the federal government can dispose of its minerals. The process combines multiple belowground parcels into one large parcel to promote orderly and efficient mineral development and encourage exploration in unproven areas. Stull, as a surface owner, was not required or invited to participate in unit negotiations.

Mineral development picked up on the Focus Ranch Unit, as it



was named. By 2009, developers had drilled three successful wells adjacent to Stull's property. They accessed two of these wells via a road across Stull's ranch with his permission. But when the unit operator breached the terms for access, Stull revoked that permission.

Western split estate landowners know their land may be subjected to energy development by the mineral owner, and Stull acknowledged that the Stock Raising Homestead Act entitled the unit operator, Entek, to use his surface to access the minerals beneath his property. But he asserted that using his land to access minerals under other properties required his express consent. Unable to reroute the access road across BLM land due to sage grouse concerns and failing in negotiations with Stull, Entek sued to force Stull to give access across his property.

Stull lost. In 2014, the Tenth Circuit Court of Appeals permitted Entek to establish an access route across Stull's land to reach its production on nearby federal land. Relying on provisions of the Mineral Leasing Act and the Stock Raising Homestead Act, the court found that in unitizing the minerals, the secretary had "eliminate[d] internal property

boundaries within the unit area" thus allowing operations "without regard to internal ownership boundaries." The unit operator could use as much of Stull's land as it needed, in whatever way it found reasonably necessary to develop any of the 40-square-mile unit. The court viewed the entire consolidated unit as one lease. As a result, the right to use the surface of the leased parcel applied to all 25,372 acres. Stull's permission was irrelevant.



December will mark the 100th anniversary of the Stock Raising Homestead Act. At the time of the act's passage, the Department of the Interior advised Congress that "farmer-stockman" activities could "be carried on without being materially interfered with by the reservation of minerals and the prospecting for and removal of same from the land." That may no longer be true. The *Entek* case affirms that private lands may soon bear more mineral development impacts. Mounting pressure to protect habitat and wildlife on public lands, and lengthy and expensive environmental assessments associated with public lands, could further push operators onto private lands within exploratory units.





While the *Entek* case concerned only roads, the potential ways an operator could use private property are seemingly limitless: gathering lines, wastewater injection wells, man camps, gas storage, drill sites, pits, or any other use related to mineral extraction anywhere in the unit. Just as Adams could not foresee mineral development, and Stull could not have imagined the impacts of unitization on his ranch, future impacts on western landscapes resulting from energy development are likewise unforeseeable.

Tara Righetti is an Assistant Professor specializing in oil and gas law and director of the program in Professional Land Management at the University of Wyoming College of Law.

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Of Ranchers and Researchers

Trespassing to collect data in Wyoming is a crime

By Temple Stoellinger

As early as 2006, employees of the environmental group Western Watersheds Project allegedly trespassed onto Wyoming ranches to gather water samples. They were looking for evidence of stream contamination from livestock, data which they intended to turn over to state and federal regulators. The ranchers claimed this was a prime example of unauthorized trespass, which not only violated their private property rights, but was particularly harmful because the information would be used to directly attack them and their agricultural operations.

Seeking, in their words, to stop a “surreptitious and clandestine effort to ignore private property rights by trespassing,” 15 Wyoming ranchers sued Western Watersheds Project. In their complaint, the ranchers requested a court order declaring the organization’s employees had trespassed, a permanent injunction against future trespass, and compensation for damages and legal expenses. The lawsuit triggered state legislators to beef up trespassing laws in Wyoming, which critics say threatens scientific research and free speech.

Under Wyoming’s general trespass statute, a person has to know they are trespassing to get in trouble. Landowners are required to notify would be trespassers—by personal communication or posting signs—that they are not authorized on a given parcel of private land. Punishment under the statute includes up to six months in jail and/or a fine of up to \$750. Some parties in the state, such as the Wyoming Association of Sheriffs and Chiefs of Police, a group that lobbied in favor of stronger trespassing laws, say this does not adequately protect landowners. Additionally, civil trespass litigation, like the action brought by the 15 Wyoming ranchers, is costly and cumbersome, says Bobbie Frank, Executive Director of the Wyoming Association of Conservation Districts, another group that called for legislative action.

In response to the alleged trespass by the Western Watersheds Project employees and concern that the existing general criminal trespass statute was

inadequate, the Wyoming Legislature enacted two new trespass statutes during the 2015 legislative session. The two statutes were virtually identical, except one made trespass a criminal act under which you could be jailed and fined, and the other made it a civil violation under which the landowner could sue for damages.

The 2015 statutes increased the penalties for trespassing onto “private open land” to collect data without permission, whether or not the trespasser knows they are trespassing. Trespassing to collect data now incurs a higher penalty than general trespass. A data-collecting trespasser could spend up to a year in jail and/or be fined up to \$1,000 for a first offense. Future offenses could bring a minimum of ten days in jail (and up to a year) and/or a fine of \$5,000, plus a potential civil action by the owner or lessee of the land requiring the trespasser to pay damages including litigation costs.

This might have addressed the ranchers’ woes, however, some last minute amendments to the bills

criminalized “entering onto *open land* for the purpose of collecting resource data” (emphasis added). Apparently, the term “open land” was meant to apply to data collected on private, state, or public lands, so long as trespass occurred on private land somewhere along the way.

However, that intent wasn’t necessarily clear in the statute’s wording. The term “open land” got many people, including University of Wyoming researchers, wondering if they could be found guilty under these statutes of trespass on state or federal land as well as private land.

That question garnered national attention after Justin Pidot, a Denver University law professor and pro-bono attorney for Western Watersheds Project, wrote an article for the online magazine *Slate* suggesting a Yellowstone tourist might commit a crime by submitting a vacation photo in a photo contest. Pidot’s article highlighted the statutes’ potential stifling impact on citizen science and data collection. He and other critics argued that the statutes attempt to block whistle blowers, stifle citizen science, and protect



ranchers whose livestock pollute streams with bacteria.

Pidot and Western Watersheds Project had bigger concerns, too. They, along with several other groups, filed a complaint in the Wyoming Federal District Court alleging the statutes unconstitutionally violated the protection of free speech. The “data censorship laws make criminals and scofflaws of those who collect information necessary to speak out about what they see and find on lands in Wyoming,” they wrote.

The Wyoming Attorney General’s Office tried unsuccessfully to have the case dismissed. Then, during the 2016 legislative session, the Wyoming legislature amended both statutes to remove the offending reference to “open land,” clarifying that the statutes only apply to trespass on private lands, not public land. Despite the amendments, the litigants pressed forward on with their legal challenge, arguing that the statutes remain unconstitutional. In early July of 2016, Wyoming Federal District Court Judge Scott Skavdahl issued a ruling in the case in favor of the State of Wyoming, finding that there is not a constitutional right to access private lands. In his ruling, he wrote that “[t]he ends, no matter how critical or important to a public concern, do not justify the means, violating public property rights.” It is likely that Western Watersheds

and the other litigants will appeal Judge Skavdahl’s ruling to the 10th Circuit Court of Appeals.

While the litigation over the amended statutes plays out, Wyoming researchers can take steps to protect themselves and the interest of private property owners. The key is to obtain written permission before collecting any data on private lands. This “will foster better communications and stronger relationships between landowners and researchers,” says Jim Magagna, executive vice president of the Wyoming Stock Growers Association. Even if the courts declare the 2015 data trespass statutes unconstitutional, knowingly trespassing on to private property is still a crime in Wyoming and still violates private property rights.

Temple Stoellinger is Assistant Professor in the Haub School of Environment and Natural Resources and co-director of the Center for Law and Energy Resources in the Rockies at the University of Wyoming.

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Tribes Tackle Drought

New and old approaches help the Wind River

By Ariana Brocious

During the record-setting hot and dry years of 2012 and 2013, severe water shortages on the Wind River Indian Reservation turned fields to dust and forced cattle ranchers to sell their herds. The irrigation season runs from May to October, but warm, dry weather combined with limited water storage means “many years our irrigators are left without water from as early as the Fourth of July to mid-August,” said Mitch Cottenoir, Tribal Water Engineer.

The Wind River Indian Reservation encompasses 2.2 million acres of sagebrush steppe in west-central Wyoming between the Wind River and Owl Creek mountains. The two tribes that live there, the Eastern Shoshone and Northern Arapaho, depend almost entirely on snowpack and glacial melt that flows through tributaries of the Wind River for their water supply. This alpine and high desert ecosystem at the top of the Missouri River watershed is especially vulnerable to climate change and drought—and so are the tribes that live within it.

While the Wind River Tribal Water Engineer’s Office does what it can to provide climate information to water users, limited federal climate and water monitoring sites on the reservation and insufficient training among staff make it hard to collect and communicate relevant data to the public in a meaningful way. Now, an unprecedented collaboration between multiple climate research stations, universities, and the Wind River tribes is addressing those challenges head on.

After the 2012 drought, Cottenoir and Northern Arapaho Tribal Liaison Gary Collins wanted

to improve the reservation’s climate preparedness. Collins reached out to Shannon McNeeley, a research scientist at the North Central Climate Science Center at Colorado State University. McNeeley brought in contacts at the University of Nebraska-Lincoln’s National Drought Mitigation Center. In 2014, the group started meeting to discuss how to create tools and provide training for water managers on the reservation.

Cottenoir, Collins, and McNeeley realized addressing the larger challenges on the Wind River Reservation would mean working on many solutions at once. So they applied for a \$390,000 federal climate-related grant to do a multifaceted, interdisciplinary drought vulnerability and preparedness project. When that funding came through in summer 2015, the project joined other efforts underway on the reservation.

“The idea is to build capacity and define parameters of drought conditions,” said Collins, which in turn will inform the tribes’ drought planning and tribal water code.



The four main components of the project consist of creating a drought risk assessment, training tribal members to collect, analyze and publish climate data, compiling and supporting local tribal knowledge regarding drought and climate, and creating a locally driven drought planning model that can be shared with other tribes.

To accomplish that first piece, researchers and scientists at universities and climate centers in Colorado, Nebraska, and Wyoming are collaborating to produce a large-scale assessment of drought risk and vulnerability on the reservation. They’ll integrate and ground-truth



Reservation prepare for a changing climate

a wide range of federal, state, and local research as well as tribal knowledge. When completed, it will become “one more significant tool we have for resource management,” said Collins.

To complement that reservation-wide assessment, the tribes and regional climate centers are also producing quarterly regional climate and drought summaries for the Wind River region, which review the last season’s climate, drought, and water supply conditions and look ahead to the future. Tools like the climate and drought summaries will be especially useful in advance of the annual growing season, said Cottenoir, helping his office “advise our irrigators within our community and the surrounding areas to the potential of drought situations so that they can make financial and personal decisions on what they want to do.” His office has already begun sharing the summaries with irrigators and water districts in the larger region.

A large part of the overall project’s capacity building effort consists of training Wind River water technicians how to collect and analyze local climate data. To date, Cottenoir’s office and the High Plains Regional Climate Center have worked together on these summaries. The tribal water office is taking increased ownership over the quarterly summaries and eventually plans to write the reports on their own. Additional education and community outreach efforts are also underway on the reservation.

“The data’s always been there but we didn’t know how to access it and where to access it,” Cottenoir said. “Through the training of our younger water techs, the future looks bright ‘cause they’re going to have that new improved technical capability to where they can interpret that data.”

Another critical piece of the project is including local knowledge



from tribal members, since many people on the reservation have cultural, in addition to economic and environmental, connections to water. McNeeley has interviewed Wind River residents to learn about historical decision making, risk perception, and adaptation on the reservation during previous droughts.

“We’re trying to tell a story about how drought has affected the reservation over time and how it could affect people into the future,” said Cody Knutson of the National Drought Mitigation Center, who leads the drought vulnerability project. Collaborators are also reconstructing historical drought records and studying ecological impacts of drought.

All of this will inform the ultimate goal of the project: developing a reservation-wide drought plan to help prepare for and mitigate impacts of future drought.



As the climate and snowpack patterns change, understanding drought and weather patterns will only become more critical, especially for water management. In addition to the drought preparedness project, the Wind River Reservation is also working on a water supply and storage study and an agricultural resource management plan. Cottenoir said all three projects, while distinct, will support and inform one another. He hopes this multifaceted drought planning effort will create a template for other Missouri Basin tribes.

An ecological anthropologist by training, McNeeley said the collaborative, iterative nature of this project—involving the Wind River community in the process from the beginning and throughout—is fundamentally different from other

approaches. “The new buzzword is co-production. And so we’re really co-producing the entire project from top to bottom with the tribes themselves,” said McNeeley.

While the distributed network of far-flung partners can make meetings challenging (a March workshop fell victim to weather when a big snowstorm closed the roads from Casper), the strength of those partnerships drives the work on the reservation, McNeeley said, “having the tribes really front and center, leading the direction of the science that we do.”

Ariana Brocious is a reporter for NET News in Nebraska. She reported this story while working on the Platte Basin Timelapse project.



Courtesy Derek Scasta

AFTER THE BURN

Fontenelle fire sparks collaboration to protect local ecosystems and economies

By Ryan Oberhelman

In late June of 2012, the Fontenelle fire ripped across the Wyoming Range, torching forests and shrublands. John Chrisman's federal grazing lease, 18 miles west of Big Piney, Wyoming, was directly in the path of destruction.

As the big skies of Wyoming filled with smoke, Chrisman rode up from his homestead and roused his livestock

from summer federal leases, racing to herd them back to his ranch.

The 64,000-acre fire engulfed and scorched his entire lease, as well as those of six other grazing permittees. Like many of the producers in the Big Piney area, Chrisman's ranching outfit depends on grazing land leased to him by the federal government. Following the blaze, Chrisman knew that the Forest Service would likely ask him to keep his animals off the allotment for several years to let the vegetation grow back—a death sentence for his livestock operation.

Before Chrisman could worry, he received a call from Chad Hayward, the local Forest Service natural resources specialist. Since Chrisman could remember, he'd been stopping by Hayward's office to have a cup of coffee and chat. Hayward had a plan that would save Chrisman's ranch and restore the pastures destroyed in the fire.



Wildfire has always smoldered across western landscapes, but now the combined forces of fire suppression and drought are making

it much more frequent and intense. Wildfires now burn hot enough to destroy large stands of pines, sagebrush, grasses, and aspens; scorch soils and seedbeds; and leave a moonscape of ash. Such a burned landscape is prone to erosion and vulnerable to invasive species, unable to regrow healthy plant communities. Grazing cattle in the growing season following a fire only makes things worse.

But livestock producers, already wrestling with the narrow profit margins of the business and long-term



drought on arid rangelands, need this grazing land. A fire that destroys their federal grazing leases also threatens the survival of family businesses and rural communities. A federal land manager's decision to rest a pasture for post-fire rehabilitation could spell financial ruin for a rancher. Hayward wasn't about to let that happen. He saw an opportunity for both the livestock producers and the ecosystem to thrive.

It was up to Hayward to restore the post-fire landscape. His task was to get the forest to once again cycle nutrients, capture carbon, and filter water. And he needed to provide something for the cattle to eat and grow fat on, too.

The best course of action was to rest the pasture from grazing for several years, and that meant he needed to find somewhere else for Chrisman's livestock. To overcome this first hurdle of the recovery, Hayward picked up the

The grazing unit seemed to have not only fewer weeds, but also enough quality forage to support more cattle than it did before the fire.

phone, calling colleagues in federal, state, local, and non-government organizations. Eventually, he secured unused pastures on a Wyoming Game and Fish habitat management area and on vacant, unburned Forest Service parcels. He also found a permittee on an unburned lease who offered to allow some of his neighbors' cattle to share his pasture. Hayward pulled together enough grazing land for all six permittees who had lost their allotments in the Fontenelle fire.

Next, he brought together a

consortium of federal, state, local, and non-government partners to restore the forage and other plants on the burned pastures. The Wyoming Game and Fish Department monitored the vegetation to assess the return of native plants and catch weed infestations. The Rocky Mountain Elk Foundation and the Wyoming Landscape Conservation Initiative funded weed treatments. The Wyoming Wildlife and Natural Resources Trust and Exxon pitched in to replace the burned down fences.

The restoration aimed to promote aspen regrowth and provide lots of high-quality forage for livestock in the understory. Hayward and his collaborators decided to rest the units from grazing long enough for the aspen and hollyhock communities to establish. For that to happen, they needed rain.

Fortunately, 2013 and 2014 brought above-average precipitation. Just two years after the fire, Chrisman moved his cattle back onto his old

pasture. What he saw was nearly incomprehensible. The fire and the restoration "opened up country that has never been that way in my lifetime," he said. The hollyhock was everywhere, and his cattle took a liking to it. Chrisman found aspen saplings with leaves "as big as a baseball cap."

Furthermore, the grazing unit seemed to have not only fewer weeds, but also enough quality forage to support more cattle than it did before the fire.

Chrisman attributes the success to the communication between government agencies and ranchers in the Big Piney area. "We've always been able to sit down and figure out who's got the best idea."

Hayward agrees. He says relationships forged among agencies and landowners long before the fire drove the cobbled-together response. Given that long-term forecasts suggest increasing fire across the intermountain west, especially as the climate warms, he hopes other communities can respond similarly. He believes the impetus is on land managers to create relationships that will set them up for successful collaborations and teamwork.

This takes legwork ahead of time, he warns. Agencies need to allow their land managers flexibility. And land managers need to plan ahead. Federal land has to go through a full environmental assessment before it can be grazed.

Despite these difficulties, Hayward, Chrisman, and the livestock producers and natural resources staff in Big Piney proved what can happen when everyone gets on board and works together. "It works too damn smooth not to have this be the model throughout the west," Chrisman said.

Ryan Oberhelman received his master of fine arts in creative writing and environment and natural resources at the University of Wyoming. He is the vegetation manager for Wallowa County, Oregon.



Courtesy Derek Scasta

This and opposite photo show rangeland on the Fontenelle Fire three years after the burn.



About 1950

The Budd family in Wyoming, circa 1950, including Mary (front left in stripes), Betty (center with headscarf), and Nancy (front right in cap).

Wyoming Stickers

Three lifelong ranchers reflect on private lands values

By Mary Budd Flitner, Betty Budd Fear, and Nancy Budd Espenscheid

“For somehow, against probability, some sort of indigenous, recognizable culture has been growing on Western ranches and in Western towns and even in Western cities. It is the product not of the boomers but of the stickers, not of those who pillage and run but of those who settle, and love the life they have made and the place they have made it in.”

Wallace Stegner, Where the Bluebird Sings to the Lemonade Springs, 1992

One beautiful fall afternoon last year, we three sisters, all now in our 70s, packed a lunch and a thermos of coffee. We struck out on the back roads through the ranchlands of our 1950’s childhood. All of us still live on working ranches in Wyoming, where our ancestors settled in 1879. We deeply love the land, and we’re proud that we still share this legacy and lifestyle. We identify with the characters Stegner called “stickers,” those who’ve stayed for many generations in one place not because it’s easy, but because we like it here and feel at home in the ranching community.

“Remember when the ranchers used draft horses instead of air conditioned tractors?” As we drove, we laughed and reminisced. We considered the many changes to the countryside during the past decades. Today, subdivisions and rural sprawl prevail, traffic buzzes to town and school, and new roads built for gas and oil production go everywhere. Summertime is busy with recreational traffic—fishermen, campers, hunters, and ATV drivers—and sadly most do not respect the manners or protocols of livestock country.

It is not rocket science to see what changes land ownership and landscape: it’s finances, economics, money ... plain and simple. Prosperity in agriculture is cyclical. Some ranches in our memory were too small to be profitable and were absorbed by larger ranches. Others subdivided, selling a few acres at a time to meet a debt

payment, hoping to outlast a drought or a down market, and soon that ranch unit was not large enough to be viable or productive. Similarly, when opportunities appeared for oil, gas, or mineral development, for timber harvest or recreational businesses, ranchers grasped those lifelines. Others sold to millionaire hobby-ranchers, absentee owners who do not know their neighbors and often do not understand our community values or support our traditions, some of whom might qualify as Stegner’s “boomers.”

Our road trip through what had once been ranch country brought nostalgia, of course, accompanied by an overpowering awareness of the importance of private lands ranching in a state like Wyoming, where roughly half the land surface is public. This importance is about the stability of long-time ownership, the investment in community causes, and the dedication to the well-being of the land itself. Private lands ownership enables relevant, observant decision-making that accepts the risk of success or failure. It supports wildlife habitat, scenic landscapes, and communities and schools.

Late in the day, we stopped on a ridge to finish the coffee, overlooking the big red barn our grandfather built long ago. Antelope grazed across the sagebrush bench, and a hawk flew above. We saw a string of cattle wandering toward water, a soft plume of dust behind them. Sipping the coffee, we wondered how the next generation might strengthen and carry on a commitment to our communities in spite of hard work and uncertain profits. The singular purpose of working and loving one’s land cannot be easily duplicated and is key to the survival of a ranch community. Working landscapes will not be sustainable without strong working communities and people who will tie it all together.



Mary Budd Flitner, Betty Budd Fear, and Nancy Budd Espenscheid are sisters and lifelong Wyoming ranchers.

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1000 E University Ave, Dept 3971
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