Resilience

A VOICE OF THE NEW AGRARIANISM

A PLACE WORTH CALLING HOME

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QUIVIRA COALITION

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Mulloon Creek Farm, Australia.

From the Editor's Desk

Sustainability. Adaptation. Mitigation. Local. Grassfed.

These words, so much in the news today across the globe, barely registered on people's radar screens fifteen years ago. For example, when we founded the Quivira Coalition in 1997, we were focused on peace-making, collaboration, land health and good stewardship. Issues such as climate change, local food production, grassfed meat and other "modern" concerns, were rarely discussed. That's not the case anymore. Soon these words will require a new conservation paradigm; one that combines the ecological, the economic and the social. Fortunately, one is emerging, led by new agrarians.

Across America, there is a resurgent interest in local, family-scale, sustainable food, fiber and fuel production. It began slowly, but has recently gathered speed. Local food is the focus and key to this new movement, but it's more than just food systems. New agrarians have a vision of resilient food production from farms and ranches that are managed for land health, biodiversity and human well-being. It means working to sequester carbon in soils, improving water quality and quantity, restoring native plant and animal populations, fixing degraded creeks, developing local energy sources and replenishing the land for people and nature alike. It is a vision of coexistence, resilience and stewardship—a place for people in nature, not outside it.

A place worth calling home.

Thanks for reading!

Courtney

Quivira Coalition Board Members*

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Dry Cottonwood Creek Ranch: Superfund Cleanup and Collaborative Conservation in the Contemporary West

by Bryce Andrews

Aerial view of Dry Cottonwood Creek Ranch in Deer Lodge Valley, Montana.

I first visited Montana's upper Deer Lodge Valley as part of a graduate school class on environmental restoration. We drove east from Missoula early in the morning and spent a full day poking through the toxic remnants of copper mining that surround the cities of Butte and Anaconda. Accompanied by a rotating cast of guides from the Environmental Protection Agency and the Montana Department of Environmental Quality, we saw it all. Beside the yawning maw of the Berkeley Pit we stared down at a mile-wide, murky, purple lake of acid mine drainage. We learned that the water was rising all the time and toxic enough to fell migratory birds by the hundreds.

At Anaconda, we walked around the relic smelter that stands like a giant gnomon on the foothills of the Pintlar Range. The stack is dark, soot-stained and foreboding. Even today, nearly 100 years after its foundation was laid, the Anaconda Smelter remains the world's largest freestanding brick structure. From the stack's base, it's easy to imagine vast clouds of smoke rising into the depthless blue of the Montana sky, hopping a ride on the prevailing breeze and billowing north toward the Clark Fork River.

We followed the path of those long-gone clouds. Crammed cheek to jowl in a van, we bounced out to the spot where Silver Bow and Mill Creek mix their flows, giving birth to the Clark Fork River. There we walked the banks and saw our first slickens. For the uninitiated, there is nothing quite like the first encounter with these bizarre dead zones. Imagine walking along what looks like a healthy, meandering stream in the mountains of western Montana. You push through thick growth with high grass brushing your fingertips. All is well until at some oxbow you part the close-set willows and step forward into what looks like the aftermath of a violent explosion. The clearing is roundish. It is totally devoid of life. The skeletons of a few long-dead trees rise out of blue-tinted, powdery dirt.

Since it is autumn and the river is low, copper salts have precipitated up from the ground. The salts frost the ground like flocking on a Christmas tree. They collect in the little divots left

The Berkeley Pit is a former open pit copper mine located in Butte, Montana. It is one mile long by half a mile wide with an approximate depth of 1,780 feet (540 m). It is filled to a depth of about 900 feet (270 m) with water that is heavily acidic (2.5 pH level). As a result, the pit is laden with heavy metals and dangerous chemicals that leach from the rock, including arsenic, cadmium, zinc and sulfuric acid. *http://en.wikipedia.org/wiki/Berkeley_Pit*

by ungulate hooves. In some places the salts are white. In others they take on a bluish-green hue. Should a bone—a cow's femur, for example—be left out to winter on the salts, spring will find it the color of turquoise. That metamorphosis, I once heard, follows from the process of copper and arsenic replacing the bone's native calcium.

There among the skeleton trees, we listened as an enthusiastic young man who worked for the Department of Environmental Quality explained that the slickens were actually pockets of concentrated mine tailings, washed down by great floods from Butte and Anaconda. Emplaced in the first decade of the twentieth century, the slickens remain a poisonous mix of arsenic, lead, copper, cadmium and zinc. They flank the Clark Fork River on both sides, pockmarking the floodplain from the river's beginning through the town of Deer Lodge.

After the slickens, we drove out along a little gravel track called Eastside Road. West of the road, alfalfa fields were planted against the folds of the river. To the east, we passed a string of weathered trailer houses, piles of old farm machinery and dilapidated corrals.

Everywhere I looked the land appeared to be worn out and used up. Knapweed, spurge and other noxious weeds grew in the borrow ditches. A glance toward the pastures found more bare dirt than growth. This overwhelming sense of depletion, coupled with the day's tour of Superfund's toxic smorgasbord, made me wonder how anyone could make his home in a landscape like this. "Who in his right mind," I asked myself, "would choose to live here?"

A year and a half later, I found myself in a unique position to answer that question. Freshly hired by the Clark Fork Coalition, a river conservation group based in Missoula, I took up residence in the southeast corner of the Deer Lodge Valley, on Eastside Road. As the Coalition's Ranchlands Program Manager, I was responsible for the management and operation of 3,000 acres and 140 mother cows on the Dry Cottonwood Creek Ranch.

Why did a river-focused group like the Coalition need a Ranchlands Program and ownership of a working ranch? For two reasons:

First, the Clark Fork River drains 22,000 square miles of rugged mountain ranges and agricultural valleys. The landscape is vast, and for the most part limited by aridity. The most productive—both ecologically and agriculturally speaking—parts of the watershed center on the sinuous course of the Clark Fork and its tributaries. To put it more bluntly, the lion's share

The Anaconda Smelter Stack is a radial brick smoke stack, once part of the Anaconda Smelter at Anaconda, Montana.

Slickens contain a poisonous mix of arsenic, lead, copper, cadmium and zinc.

of riparian habitat in this watershed is owned and managed by ranchers. The Coalition realized that working successfully to improve conditions along the Clark Fork meant understanding the perspectives of the people who graze and farm along its banks. Owning a ranch seemed like a good way to start a larger conversation about the way that agriculture could increase, rather than diminish, the ecological health of the river and its attending streams.

Second, much of the upcoming Superfund Cleanup will take place on private lands. In the coming years, vast quantities of toxic mine tailings will be removed from the banks of the Clark Fork. Slickens will be dug up, hauled away, and replaced with clean soil. Other, less contaminated areas will be amended with lime and planted with native seed. This work will take place on the riverfront ranches of the Deer Lodge Valley.

The idea of haul trucks, D-8 dozers and massive excavators crossing through hayfields and calving grounds makes ranchers understandably nervous. Recognizing this, the staff and board of the Coalition started looking for a place to field test restoration strategies and demonstrate ways in which the impending Superfund cleanup of the river could benefit farmers and ranchers in the area. With miles of heavily polluted stream bank and a prime location in the upper part of the Deer Lodge Valley, the Dry Cottonwood Creek Ranch was a perfect fit.

When I came to Dry Cottonwood in the spring of 2008, the ranch didn't have much in the way of tools or infrastructure. We had a lofty goal for the place, plus a sharecrop agreement with a local rancher, but that was just about it. I spent three and a half years on the ranch, and in that time had the great privilege of contributing to its ongoing progress toward ecological restoration and agricultural innovation. Some notable projects included:

- Partnering with the Clark Fork Watershed Education Program, the Watershed Restoration Coalition and Powell County High School to bring students to the ranch for hands-on learning about stream restoration and ecology. Students monitored

A local high school class helps tear out old barbed wire fence on Dry Cottonwood Creek Ranch U.S. Forest Service allotment.

reaches of Dry Cottonwood Creek and then returned later in the semester for a day of tree planting.

- Working cooperatively with our neighbors to secure funding from the Montana Department of Fish, Wildlife and Parks to build six miles of riparian fence along Dry Cottonwood Creek. The work was completed on our property, state land and three neighboring ranches.

- Completing an ambitious restoration project involving planting, seeding, riparian fencing and stock water development on Dry Cottonwood Creek.

- Experimenting with the production and local sale of natural, healthy, grass-finished beef. We raised and finished our own calves, then marketed them to consumers within the Clark Fork Watershed. Though the program only made use of about 10 percent of our calf crop, it was successful and profitable.

- Bringing groups of volunteers onto the Forest Service grazing allotment that we share with three other local ranches to remove worn out stretches of barbed wire fence. With the help of high school and University of Montana students, we removed many miles of fence.

- Facilitating the Superfund cleanup process both on and off the ranch. We worked with contractors hired by the Montana DEQ to integrate a rigorous soil-sampling program with our agricultural operations. The sampling will allow for a better understanding of the way that toxic sediments are distributed throughout the Clark Fork River floodplain. It will also provide a road map for moving forward with restoration on our property and others in the valley.

- Using temporary electric fence and a short-duration/high-intensity grazing regimen to improve livestock distribution, wildlife habitat and the ecological condition of our pastures.

- Partnering with agencies, nonprofit groups and other entities to create realistic and profitable models for sustainable ranching. Between 2009 and 2012, we added about $75,000 of new annual income to the ranch's bottom line. Some of the money came from partnerships with state and federal agencies like Montana Fish, Wildlife and Parks (public hunting and a fisheries enhancement project), and the Natural Resources Conservation Service (the Conservation Stewardship Program). Other revenue came from leasing irrigation water

for in-stream flow in the Clark Fork River and from our growing grass-fed beef program. In all our endeavors, we tried to show our neighbors that good stewardship of our land, waterways and livestock could help, rather than hurt, the economic viability of the ranch.

- Subsidizing, in partnership with other conservation groups, three hazardous materials certification courses for ranchers, contractors and residents of the areas affected by Superfund Classes. These "HAZWOPER" courses are a necessary prerequisite for anyone working on the Clark Fork River cleanup. By offering them free of charge to local residents, we sought to give people a chance to find jobs in a growing restoration economy.

- Securing funding from Keystone Conservation, a nonprofit group that works to mitigate conflicts between wild predator species and livestock, to defray the cost of hiring a herder to manage livestock on our National Forest grazing allotment.

To date, the Dry Cottonwood Creek Ranch has played host to a wide variety of ideas, programs, projects and initiatives. It has served as a classroom, a proving ground, an ecological guinea pig and a focal point for the conservation and ranching communities of the Clark Fork watershed. Today Dry Cottonwood is still alive and kicking. Currently, it's poised on the brink of a Superfund Cleanup that will change the physical, chemical and cultural makeup of the Deer Lodge Valley. The Coalition's ambitious attempt at collaborative conservation is ongoing. It is well documented at *www.clarkfork.org*.

Not long ago, I moved on from Dry Cottonwood. These days I'm responsible for the land and livestock of a large organic ranch that sits at the top of the Tom Miner Basin, right on the edge of Yellowstone Park. I wake up each morning above 6,600 feet, and this lofty remove has given me ample opportunity to think deeply about what a place like the Dry Cottonwood Creek Ranch stands for and why it plays a significant role in the landscape of the contemporary American West.

Dry Cottonwood is important because it creates physical and intellectual common ground for ranchers and conservationists to share. In this respect, the ranch is an olive branch—a hand extended from one world to another. In the best moments, when everything fell together, the work done on Dry Cottonwood laid a foundation for a new sort of trust and a closer relationship between the ranchers of the Deer Lodge Valley and the staff of conservation groups like the Clark Fork Coalition.

Collaborative conservation isn't a new idea, but it's a ripe one. Across the West and beyond, the most interesting and successful efforts at achieving landscape-level sustainability tend to arise at the confluence of agriculture and environmentalism. One needn't look far to find examples: the Quivira Coalition, of course, is one. The Blackfoot Challenge—a wildly effective group of ranchers, conservationists and government employees in western Montana—is another.

For the majority of my professional life, I have drawn wages as a rancher and land steward. Working in this capacity has convinced me that successfully navigating the challenges of the contemporary West—issues like exurban sprawl, noxious weeds, water shortages, climate change and predator reintroduction—requires a unique skill set and an exceptionally open mind.

By bridging the divide between agriculture and conservation, places and projects like the Dry Cottonwood Creek Ranch open an essential door that has heretofore stayed shut. Such endeavors allow for the emergence of a new and powerful demographic—one that could fundamentally improve the way we occupy the landscape of the American West.

Working with the genetics of cattle herds, one often hears the term "hybrid vigor" thrown around. Mostly people are talking about the fact that a stout injection of genetic diversity tends to make calves bigger, stronger and healthier.

Husky, piebald calves are great, but I'd prefer to look at the expression a bit less literally: On Dry Cottonwood, I had the good fortune to experiment with the potential of intellectual hybrid vigor. There, conservationists and working ranchers sat down at the same table. They had to because I had just one table to offer. More often than not I found that in discussion and debate, as in breeding, diversity yielded the best results.

The experience of running a ranch like Dry Cottonwood has left me with two lasting sentiments. The first is a terrible sense of urgency, deriving from the fact that the landscape sustaining us is arid, finite and fragile. For a long time we have diminished it annually, and we must now find ways to stop. The second thing is an insistent, durable hope that projects like Dry Cottonwood could help us turn an essential corner in the way we approach the stewardship of the West.

We must find ways to make our living from the land in perpetuity, without exhausting the wild systems that feed our individual and cultural soul. That much is obvious to anybody who pays close attention. Solving that big riddle, however, is a tricky proposition. I'm not prepared to say that we made any novel or momentous strides toward it on Dry Cottonwood, but at least we're pushing in the right direction.

Projects like the Dry Cottonwood Creek Ranch embrace a collaborative, constructive ethic. This ethic directs us to fix rather than to fight. It counsels us to learn instead of litigate. If pursued at length it can create and unite a community of ecologically altruistic ranchers and pragmatic conservationists. It can turn a landscape—even a hard-used one like the poisoned upper reach of the Clark Fork River—into a place worth calling home.

About the author:

Bryce Andrews is a rancher, conservationist and firm believer in the value of sustainable working landscapes. He currently manages the land and livestock of an organic ranch in the Tom Miner Basin, on the edge of Yellowstone National Park. Bryce's first book, a memoir about the harsh realities of ranching with wolves, is forthcoming from the Free Press in late 2013. Contact Bryce at bpc.andrews@gmail.com

Yes We Are Farming: Direct Action for the New Economy*

by Severine von Tscharner Fleming

I want to affirm for you a phenomenon that I've come to know, become part of and have spent the last five years documenting. It's the young farmers in America movement. My name is Severine and I'm a young farmer from the Hudson Valley of New York. I also direct a grassroots nonprofit. Our mission is to recruit, promote and support new farmers in America. We call ourselves "The Greenhorns," and our organization is run by farmers and others - but mostly by those with at least one foot in production agriculture.

The young farmer movement looks and sounds romantic… and it is. It also is ridiculously difficult to break into farming these days. And it is critical that we do so. People who take on this challenge are highly tenacious, ambitious, inventive, and also (generally speaking) either stubborn or a little nuts.

America, land of opportunity

This is our land, our big, big land and while there are big challenges, there are also still enormous opportunities—if we are willing to take some risks. We'll seize opportunities to buy inexpensive battered pastures and compacted soils—and then heal those lands using good land stewardship techniques. We'll reclaim territory from commodity crops, and try our best not to churn or ruin our own soils while we build up enough capital to stop roto-tilling. We'll house animals in trailers and hay carts, prop up old barns, and make the best use of the wonderful portable fencing options available to us. We'll process our own darn chickens and build our own darn websites. We are just as stubborn and innovative as farmers have always been.

I've documented this movement in a film, a recently published book of fifty essays by young farmers and in the 120 plus interviews on Greenhorn Radio. I have participated in over 40 young farmer panels in 2011 in which we discussed the barriers to farming ad nauseum. The commitment and boldness of these young farmers comes through repeatedly during these conversations. I'm pleased to report this movement is dogged and ambitious, strong-willed and strong-armed. Young people are inspired to get into farming for both political and environmental reasons. They find their way in through apprenticeships and internships, they network to discover which farms teach the skills they seek and they work hard to build a skill set when they get there. The trick is to gain proficiency in carpentry, horse wrangling,

*Based on Severine's talk at the 2011 Quivira Coalition 10th Anniversary Conference.

basic machine repair and irrigation system installation/maintenance—all without going into debt, and preferably before you have a family to take care of.

Why We Do It

At a time when we estimate that more than 50 percent of agricultural workers in the USA are undocumented migrants to this country, it's sometimes hard to imagine why college-educated (and student loan-carrying) Americans would see opportunity in this field. The wages aren't great at the entry level, but our dream motivates us past this. We dream of becoming managers, then owner-operators of farms that serve food to customers within a 200–500 mile radius. We are working toward managing businesses that will grow, that provide cash flow and that can even allow us to send our kids to college. We are talking about prosperous, sound, sustainable farming as the means to a more stable, more sustainable, healthier farm economy, which in turn strengthens the overall economy. We plan, collectively, on having a real impact on America, by farming.

- In America we have more prisoners than farmers.
- In the next 20 years more than 400 million acres will pass forward from retiring farmers/farmland owners.
- In the U.S. today, for each farmer under 35, there are six over 65.
- Secretary of Agriculture, Thomas Vilseck, wants 100,000 new farmers, but the Beginning Farmer and Rancher Development Program got cut by 50 percent in House version of the 2012 Farm Bill.

Where We Come From

As national student loan debt tops 1 trillion dollars and city jobs are harder to find, more of us are seeking ways to live frugally and learn a trade that will reliably feed us into the coming decades. I cannot overemphasize the interest that exists out there, much of it from people born in cities and suburbs. Many new farmers in the movement come from an involvement with "Food not Bombs"— a totally volunteer-run nutrition campaign that gathers food from dumpsters, farmers markets and other sources to feed homeless and hungry people for free. Food not Bombs exists in some form in most big cities in the USA and provides an "organizers' school" for thousands of passionate food justice activists. Another increasingly popular entry portal to farming is AmeriCorps, and the more food-oriented Food Corps, which places young Americans in food-oriented nonprofit jobs (often building school gardens) right out of college. Many of today's young farmers attended farm camps when they were kids, or went on field trips to local farms through their elementary schools. A few participated in 4H, though not as many as you'd think. The educational backgrounds of young farmers today varies widely: engineering, public health, computer science, literature, anthropology, earth science—but the verdict that we come to after examining our options is the same: I want to live a life with dignity and purpose, and have a positive, tangible, satisfying impact on my community through farming.

Our Tools

This next generation of farmers depends upon both computer and business literacy. It is the 21st century, and young farmers are using a 21st-century toolkit. New media offers us new formats and radical ways of sharing information and resources. These resources range from crowd sourcing/community investment funding models like Kiva (*www.Kiva.org*) and Kickstarter (*www.Kickstarter.com*), to open-source farm-engineering sites like Farm Hack (*www.farmhack.net*). We are utilizing principles of adaptive management and Holistic Management to design campaigns, networks and collaborative projects, as well as to make decisions for the farm.

We also have fun organizing barn dances and Crop Mobs where farmers gather to work together, then have a big community lunch afterwards and vote on which farmers to help next.

We realize that collaboration is often the winning business tactic. A common marketing strategy for young farmers is to set up dynamic Community Supported Agriculture (CSAs) hubs that act as mini-distributors. These CSAs aggregate farm products and distribute them to a network of customers, benefiting the whole local food system by matching product and market, and shifting commerce away from the supermarket. While computers may play a big role for new farmers, most still recognize that for a business rooted in place, some social technologies haven't changed much over time. Chatting about the weather and passing the time of day with neighbors are still some of the most effective tools we have.

We Need Our Mentors and Partners

The model of farmer/statesman, so prominent in the early days of our democracy, seems to be on the rise. Young farmers are eager for civic engagement, and are showing up to sit on local boards, farm bureaus, running for local office, joining advisory committees to land trusts and conservancies, writing op-ed articles, and doing outreach to schools. Ever practical, we acknowledge that if our land and our local economies are to remain intact, we must honor and do business with the farmers who are retiring, and we also need to create institutions that specifically serve the unique needs of this new generation of farmers. It is not usually a streamlined process, but the messy logistics of passing farms and farmland forward is a job we are undertaking.

A great strategy for young farmers who want to keep informed about useful policies and grant opportunities is to work part-time for the local Agricultural Extension office! If young farmers, themselves, are embedded in the social architecture of change-making, that is, connected with community foundations and Agricultural Extension or as lenders at the local bank/agribusiness development corporation, then we can translate this new willingness into structural changes for a more sustainable and resilient local food system. The key is getting a foot in the door with important institutions, as well as with the established farming community.

Our valley recently conducted a new farmer oral history project. It toured through all the town libraries in the county for six months. The librarians were thrilled with the tremendous attendance and local press coverage this oral history project garnered; even our congressman came. Having such a public project about the next generation in agriculture also had the unexpected result of connecting existing farmers to newcomer farmers in the community. At the Greenhorns' office on the main street of our county seat, established farmers started coming in and offering details on land they had to lease to "one of these new farmers I keep hearing about." It's not just new media that makes these connections; sometimes it is good old fashioned gossip!

Policy Helps

To gain recognition, young farmer groups in other nations have staged theatrical events like releasing piglets under the Eiffel Tower, and

installing a mile-long farm on the Champs Elysee in France. Young farmers in the United States are mobilizing to shift programs at the federal level through the Farm Bill. We want the government to invest in local food system infrastructure, low interest loans for beginning farmers, training programs, transition support, funding for greenhouses and incentives for landowners to lease to beginning farmers.

These suggestions are laid out in the "Beginning Farmer and Rancher Opportunity Act" which was developed in part by suggestions gathered from young farmers surveyed by the National Young Farmers Coalition (NYFC). NYFC is a two-year old policy advocacy organization that "works for young farmers by strengthening their social networks, helping them hone their skills through the facilitation of peer-to-peer learning, and fighting for the policies that will keep them farming for a lifetime." NYFC has already had some success in working with the Farm Service Agency (FSA) on microloans, Beginning Farmer and Rancher Development Program, and Environmental Quality Incentives Program (EQUIP), among others. Check out the NYFC website *(www.youngfarmers.org)* and JOIN today!

Unfortunately, the 2012 Farm Bill process has been pretty distressing for young farmer advocates. It looks as if the Feds plan to cut existing conservation programs, and are making a seemingly blind commitment to export-oriented agriculture. It's clear we have a lot more work to do in convincing our representatives that regionally-oriented farms—run by families—represent our best investment in homeland security. Communication work remains to be done by citizens and farmers alike. Michael Pollan has done us all a favor by raising awareness on these issues, but it might be time for some more theatrical, farmer-driven advocacy.

So, no, it's not all good news. The closer you get to the ground… the denser the weeds. Only minutes into a discussion between farmers (old or young, established or new) and you'll hear about the heartbreak, the obstacles, and the challenges to stay on (or obtain) viable land in a highly distorted agricultural economy. Farming involves never-ending facilities upkeep, liability insurance, parking tickets at the farmers market, food-safety regulations, health insurance costs, perishable products, inadequate machines, and the dysfunctional remnants of a threadbare farm service sector… what's left in many places after the last half-century of consolidation and centralization of our food economy. Easy start-up is a myth.

Making it happen

In farmable places where there are millions of consumers eager for locally-produced food, there are often lots of millionaires competing to buy land for holiday homes. Where farmland is affordable, there are sometimes only a hundred people in the town. Given this dilemma, a young farmer can either negotiate a good lease on a millionaire's land and sell fresh vegetables to fancy restaurants and farmers markets (reliable cash flow), or opt for the rural option and make portable jams, jerky and aged cheeses, but own their land, their economic sovereignty and their peace of mind.

Some of the luckiest young farmers find a great deal in a great place made possible by community foundations, land trusts, retiring farmers with vision, the backing of family or a low interest FSA loan. Finding that sweet spot

is the trick. If you have an agricultural operation and are interested in engaging a young person, but don't already have a connection to our network, PLEASE go to the nearest community/ liberal arts/land grant college, regional sustainable agriculture group, natural food store, farmers market, or refer to the list of resources at the end of this article to PLUG IN. You'd be surprised how effectively a social network can be used to connect you with the willing young hands and hearts of this next generation.

Big things start small and those of us in this new farmers' movement are still running small - or medium-sized operations, growing locally, gaining experience and knowledge and aching to scale up (I so want to get a loading dock!). Some of us are already scaling up—but there are many more of us that could be with just a little help from all of you—a special chance on a piece of land, a great deal on equipment, social solidarity, babysitting, help with accounting, a graphic design tip, or low cost advice from an attorney. We will continue to need mentorship and guidance, and the occasional kick in the pants. It will be hard, even with your support, but it will not be boring. Don't forget that we may need a pep talk every now and again.

About the author:
Severine von Tscharner Fleming farms (and grazes livestock) in the Hudson Valley of New York. She is a founder of The Greenhorns and National Young Farmers Coalition, both nonprofit organizations that support beginning farmers, as well as co-editor of "Greenhorns: 50 Dispatches from the New Farmers Movement" (Storey Publishing, 2011), and host of Heritage Radio Network's Greenhorn Radio. Her documentary film, "The Greenhorns," has screened at more than 540 community venues in the United States and will soon be available to watch over the internet. Look for the upcoming publication, "Greenhorns' New Farmer's Almanac," due out December 20, 2012, and other free publications on the website: www.thegreenhorns.net. Join the mailing list and join the movement! Contact Severine at smithereen@me.com

Resources for landowners seeking help and/or new farmers seeking work:

- ATTRA's apprenticeship list (*http://ATTRA.gov*)
- Quivira Coalition's New Agrarian Program (*http://quiviracoalition.org/New_Agrarian_Program*)
- High Country News (*www.hcn.org*)
- Good Food Jobs (*http://GoodFoodJobs.org*)
- The Greenhorns (*www.thegreenhorns.net*)
- Organic Volunteers (*http://Volunteers.org*)
- World Wide Opportunities on Organic Farms "WoofUSA" (*http://WWoofUSA.org*)
- Ourgoods.org (*http://Ourgoods.org*)
- Seek out or START a local listserve for further discussion about draft animal power, bicycle-adapted micro-milling, vegetable washing technologies, home-grown biofuels, wind power and anything else you can imagine!

For more resources, see Professor Neil Hamilton's article on page 29.

On Building a Regenerative Economy

by Dorn Cox

Growing up, I had always heard that farming was something to get away from, and so I did. After studying international agriculture and economics at Cornell University, I did not return to my family's diversified organic farm in New Hampshire where I grew up, but worked in technology and finance in New York City, Buenos Aires and Hong Kong. And yet I was not happy. Looking back at a note I wrote myself while on a hydrofoil to Macau, "I deeply miss my farm and my family." It turned out that the farm had never stopped being part of me, and so, 10 years ago, I left the cities, met my wife and returned to the land where four generations of my family now live and work.

New Hampshire is the "live-free-or-die" state, known for the independent spirit of its citizens. At one time in the 1830s, two towns raised more sheep than are raised in all of New England today. Wheat fields stretched for thousands of acres and fed its citizenry and cities. Despite this independent heritage, New Hampshire is now one of the most dependent states in the union, relying on imported food and fuel, and growing only about five percent of its needs. More than 60 percent of homes heat with oil, and yet a common complaint in one of the most forested states in the nation is the high cost of oil and the low price for wood. We have abundant rainfall, a climate in which a field reverts to brush in a few years and forest in just decades. New Hampshire has 40 percent of its land area in agricultural soils, yet farms only 10 percent and less than one-third of one percent of the population is engaged in managing the land. It seems to me a cultural paradox: With abundant, fertile land (with a few rocks), plenty of water and capable people, how can we not make an independent, abundant living with the land?

Winter rye being rolled as a weed suppressing mulch before planting no-till sweet corn (without herbicides).

Ten years ago, as I reintroduced myself to the farm I grew up on and began contemplating this question, it was clear that there was greater potential. The land wanted to grow, but conventional agriculture had discarded it as uneconomic. Like so many farmers across the country, our neighbors in New Hampshire joked about selling wholesale, buying retail and paying freight both ways. Although it was always said in jest, it was also a sad indictment of established practices as these farms struggled to survive. I knew that there must be other ways to approach this paradox, and I was sure that, if I was going to be able to make our farm work, this was not a model I wanted to follow. At the time, I was drawn back to the land by a need to be connected to something more real, and a belief that my work with complex systems analysis, finance and project management, and building networked enterprises based on open source software might help in managing our family's land. Although I found my experience helpful, I also found that none of what is called "high tech" comes close to the wonderful complexity of agricultural systems.

My first project was to work on minimizing our farm's inputs, which were, in fact, bought as retail electricity and fuel. I had been interested in pursuing a career in the energy development field after college but became frustrated at the time because energy was just a pseudonym for "petroleum" and "utilities" with very little room for innovation. However, many years later, when I started researching energy options for our farm, I was immediately attracted to the idea of biodiesel because the entire process, from field to fuel tank, could be scaled to a single farm. It could thus enable our operation not just to buy wholesale, but to grow the feedstock on site and bypass the entire global supply chain. In Argentina, I had seen fields of sunflowers growing in a similar climate and thought, "Why not try some varieties here and see how they do?" After a brief discussion with Cooperative Extension at the University of New Hampshire, plots were planted, combines worked on and an oilseed press secured. In the first year, 2002, we grew a sunflower crop that produced 60–80 gallons of oil per acre, and a 30 percent protein meal that was a by-product of pressing the oil on farm. It was very exciting to produce both high quality cooking oil that could then be used for fuel as well as feed for animals. The entire supply chain was within the farm, and we certainly seemed to be making progress away from buying retail.

However, as we explored the larger agricultural system, it soon became clear that biofuel was only a small piece of the puzzle. Because the entire field to food to fuel process was not spread across the globe, I was able to look at all of the energy input costs directly and see that the long term profitability of this fuel in our operation was directly related to the energy that was put into growing the crop, and that was directly related to the health of our soil. Heavy tillage was one of the greatest energy inputs for the whole farm system and the challenges—dragging heavy iron implements through our rocky soil with big horsepower—were clearly not well suited to my goal of having the end products yield more energy than they needed to grow. In my second season of growing oil seeds with conventional tillage, I came across the work of some Pennsylvania farmers who were demonstrating organic no-till techniques by planting directly into rolled cover crop mulches. The potential was to drastically reduce the number of passes over the field, and even to reduce the energy of those fewer passes.

In studying the no-till literature, it was clear that the benefits were not just energy savings but also enhanced soil health. While traditional plowing provides a quick flash of nutrients to the plants that growing season, it also releases carbon to the atmosphere and reduces the future capacity of the soil. I had not previously been focused on the energy value of the carbon stored in our soil, and it soon became clear to me that, if I were going to have our farm achieve the goal of being truly profitable in a biological sense, we could not do it at the expense of the topsoil. Because the process doesn't depend on loosening soil, the added benefit of working with cover crops that are mulched and not tilled is that the rockiness or depth of the soil isn't so important. Rocks and old weed seeds are buried rather than brought up to the surface.

I had now identified that everything that we were growing on the surface was actually peripheral to our farm's more central role of preserving and building healthy soil in order to remain viable into the next century and beyond. A new, soil-centric approach to farming emerged: Take care of the soil and deposit more carbon than you take out so the soil will be more resilient and provide a more regular return, no matter the crop.

As I started growing more oil seeds, including canola, mustards and sunflowers, all required at least a three-year rotation in order to break pathogen cycles and maintain yield. Grain crops were the logical rotation to introduce before going back into forages and oilseeds. This was daunting, however, given that grain had not been grown in our area since the Civil War when it was

harvested by hand. As much as adding grain made sense, my farm operation was also getting more complicated. There was clearly too much trial and error for one farm to bear, and it therefore became important to find other farmers willing to share the risk in developing new growing techniques, skills and infrastructure that would reduce production costs while also producing new high value products that could be sold locally at retail prices.

Corn following vetch without another nitrogen source.

Several farmers stepped up to take on pieces of the puzzle, and, with the help of USDA/NRCS, we were able to improve cover cropping for nitrogen and weed suppression and begin building experience with no-till and low-till planting in New Hampshire. The group of farmers, loosely organized as the Great Bay Grain Cooperative, also exchanged knowledge and added farm-built infrastructure from cleaning grain and providing storage to finding more combines, oilseed presses and gristmills. As a group, we continue to build the skills that will allow us to grow more of our own inputs (rather than buy retail) and sell at retail prices. Since most transactions are on-farm or local, shipping costs are also dramatically reduced.

But the quest is far from over, and the complexity and importance of this approach continues to expand as we attempt to close biological loops and localize technology. It will not happen overnight, but we are gradually able to replace products otherwise produced by multibillion-dollar, global supply chains—from processed grain and animal feeds, to biodiesel catalyst, to nitrogen fertilizer, to the fuel that powers our tractors. As we learn more about how our agricultural systems work, the importance of the relationships with other farmers and the wider community is also exposed. The project of localizing and understanding these systems is beyond any one individual: Only by collaborating and sharing knowledge, tools, designs and seeds have we made progress.

As we delve deeper into what makes our soil and farm work, we are exposing an economics that is greater than the agricultural economics or even the ecological economics I studied at Cornell. I feel that, for the first time, our family farm is on the edge of a regenerative economy, which links us to our customers, to other farmers and to the land. On our farm I can see living economic growth express itself when grazing patterns match the growth cycles of the forage, when grain prospers following a legume cover crop and when earthworms in the soil are abundant. I believe that this is the true economy that each and every one of us can feel as we struggle to reconcile stock market reports or futures prices with the reality we experience. Each individual life—from soil fungi, to cow, to grains, to humans—will not survive individually in this larger economy, yet cumulatively this living economy has already grown and transformed a hot environment of methane and rock to a cooler one of oxygen, nitrogen, carbon, water and deposits of topsoil—a living skin—which we have the privilege of contemplating and improving.

We are starting to see that we can create abundant yields while adding soil, a process that reveals a truly empowering role for the agrarian. It is through our understanding and actions that we can cause the natural economy to function at a higher rate. I see the surplus from the abundance we intentionally grow as the basis for a "regenerative economy." Without the agrarian, pH would not be adjusted, geological compacted layers alleviated or phosphorus freed from the

soil with cover crops. With the same industriousness that has reduced diversity and resilience in our landscapes, so, too, can we on our farms introduce diversity, resilience, health and the abundance of true biological profitability.

This is by no means a new idea, but, as Samuel Johnson said in 1750, "Mankind more often needs to be reminded than informed." As I started to explore the relationship between the productivity of the soils on our farm, the amount of fuel that we could produce from the woods and oilseeds and how the nutrients cycled, I came across the writings of François Quesnay, a prominent pre-French Revolution economist and physician, who recognized that blood in the body circulates rather than is consumed by the organs as was previously thought; this led to his insight that agricultural commodities might circulate through an economy like blood through a body. This first study of economics, later called physiocracy—loosely translated to "Government of Nature"—was the basis of Adam Smith's better-known work, *The Wealth of Nations*. These 18th century economists were describing a regenerative economy when they wrote that all wealth originated with the land, making farming the only truly productive enterprise; all other work was seen as extraction or transformation of the original value created by the farmer. Discovering this writing once again shifted how I thought about the land we manage and how I thought of myself in relation to all other professions. This revelation also carried with it responsibility for the stewardship and improvement of the primary resource responsible for creating growth and abundance in a regenerative economy.

This hairy vetch provided the nitrogen needs for the 2012 corn crop. It was drilled directly into hay sod and established without herbicides.

We create the regenerative economy to produce biological abundance

Beyond just words on a page, I could finally see the accumulation of topsoil, coal and oil as a biologically produced carbon bank, proof of past growth of the living economy; it represents the accumulated surplus of life on earth and on our own farm. Each plant and animal in its life and as a species has played a role with an absolute profit and loss expression. If it prospers, it grows, thrives and reproduces as it collects, retains and exchanges nutrients from the environment; but all succumb to entropy in the end. The magic of the living economy is that where there was just one life, through seeds and eggs, there is the potential for many. Where there was just some carbon deposited in the soil as a surplus from the last life, there is a little more.

It is this simple accounting process of changing the soil that is observable in just a single season, and, unlike my electronic deposits in the bank, the deposits of surplus organic material into the carbon bank show a natural form of compound interest and a natural and real return on investment. I can clearly see that as I invest one seed I get one hundred back, and that as I return the residue, nutrients are circulated like blood through a body and soil responds like a muscle being used. When one seed is invested the following season, and 120 seeds are returned, I can observe true compound interest based on the universal asset of life: carbon. And, like any farmer, I can also feel the sense of satisfaction in knowing that the increase in return and the surplus added back to the soil has been truly earned, and has not simply extracted from the millions of lives before us.

I was so taken by these revelations and the potential for returning carbon to the soil that I did some simple calculations. If the degradation and loss of soil carbon since 1750 in the form of organic matter, coal and oil transformed into 246 billion tons of carbon in the atmosphere were instead transformed into new soil, it would create 10 percent organic matter six inches deep across 2.3 billion acres of the Sahara, or about 46 percent organic matter soil, eight feet deep across the 32 million acres of active cropland in the United States.

No-till planter seeding directly into mulched hairy vetch.

More knowledge spread across more people is critical to the growth of the regenerative economy

I left my last corporate job partly because I believed that our software would be more successful if we were to share the source and then develop the business around our own expertise. With networked communications technology we are in a better position to share knowledge than in any other period in the history of our planet. I feel lucky and privileged to live in a time when we can share, store and exchange complex ideas just as effectively as a saved seed documents the millions of years leading to its successful development. In my quest to develop our farm's first biodiesel processor and through my professional technology work, I became exposed to collaborative, open source documentation methods used to share the small "appleseed" biodiesel processors. Since then, the complexity of my farming operation and diversity of technology would be unmanageable without the free flowing exchange of information with farmers and engineers in online communities. I believe that open source knowledge sharing will revolutionize agriculture just as Wikipedia has revolutionized the encyclopedia. The beginnings of this exchange can be seen in the growing resource of do-it-yourself instructions posted on sites like *Instructables.com*; images of tools being fixed and used on YouTube; and in the documentation of mass customization and repurposing technology in publications like *Make* or *Farm Show* magazines.

As with so many operations, the tools on our farm must be increasingly flexible and responsive to rapid changes on the ground as we push and refine the boundaries of agricultural knowledge. Often what is needed is not commercially available. This past season I found The National Young Farmers Coalition's Farm Hack project (*www.farmhack.net*), and our farm hosted one of the very first on-farm hacking (problem solving) workshops, bringing together farmers and engineers to brainstorm, document and publish designs. I now post many of my own projects, including the mobile biodiesel processor and an oat dehuller. Other posts include greenhouse temperature, water level and electric fence monitoring systems that text a cell phone when they need attention. Each of these was an innovation generated by a farmer who was sharing his or her explorations and knowledge.

Accelerating the accumulation and exchange of knowledge

As the diversity and complexity of cropping systems have increased on our farm, monitoring and feedback systems have increased in value. While we must still rely on our own eyes and other senses, we are no longer limited to what we can humanly see, feel and remember. With low cost technology, we can now measure quickly

and inexpensively levels of soil respiration, photosynthetic activity, aggregate stability, water capacity and mineralizable nitrogen.

I regularly use Cornell's soil health test (*http://soilhealth.cals.cornell.edu*), and this spring I expanded the ability to monitor biological activity on my farm by collaborating with Farm Hack and Public Laboratory (*http://publiclaboratory.org*). Public Labs is an open source community which develops and shares appropriate ultra low cost observation technology, and I had interesting results after using these sites. I noticed in some fields that locally produced wood ash greatly improved no-till vetch drilled into a living hay sod and thought the results would be more clearly visible from overhead. This was a very exciting trial because the use of wood ash could provide a year's nitrogen needs from the atmosphere while adding tons of carbon to the soil with very little input. A 10-minute flight with Public Labs' open-source and a $100 balloon-mounted camera (and associated post processing) yielded data that would otherwise have taken weeks of labor to collect. Just a few weeks later we were able to document more fields using a camera mounted in a remotely-controlled aircraft that cost only $200.

I believe that our farm's interaction with communities like Farm Hack and Public Labs, along with participation in traditional cooperative extension events and collaborative research projects with other farms in our region, is as important as walking the fields each day. The number of new ideas that I can now assess and try has increased, and the risk of trying them is reduced. These communities provide a greater context in which to place my own observations, to document and share experiences, and to obtain feedback, which in turn spurs new ideas and approaches.

New agrarians and the heartbeat of the landscape

The revelation of this living economy has transformed the way I see myself as an agrarian. I no longer see an environment of scarce resources to be controlled and protected, but an environment of abundant resources with all the building blocks of life, a surplus of carbon and an abundance of nitrogen available in our atmosphere. By artfully managing the same biological systems that create a productive patch of soil from a sand lot, we can change the way we think about our most basic of natural assets. Agriculture should not be limited by statistics of current arable land, but by the question of where land can be created and improved from eroded and depleted expanses that stretch across the horizon. Seeing the limiting factor as knowledge rather than resources means that more people engaged within these systems can create a path to healthy landscapes, people and society. Reversing the negative language of limited resource consumption into the positive framework of human impacted growth and abundance creates hope, purpose and direction: The regenerative economy has yet to be built, but it is within our capacity.

At the most basic level, building a regenerative economy is learning to make a life with land I love, sharing that experience with friends and neighbors, and recruiting new agrarians in the endeavor to build a biologically profitable economy by investing carbon in the soil and expanding natural abundance.

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Four Farms Down Under

by Courtney White

I had the pleasure recently of spending 12 days in Australia, visiting four amazing farms, giving a talk to a carbon farming conference and having my brain saturated with a cavalcade of innovation. I also drank a boatload of instant coffee. I was impressed by Aussie inventiveness; by their open, upbeat and nonconformist ways; and by their willingness to tackle topics that Americans shy away from, including climate change, a carbon tax and paying farmers to sequester CO_2 in their soils. I was also impressed by their sheep.

Mulloon Creek Farm.

Aussies have a lot of sheep.

This is a good thing. It says a lot about their past, of course, but it also indicates positive things about their future as I'll try to explain. But first I need to set the stage.

The founding of modern Australia is a familiar story. After losing her colonies in the American Revolution, old Mother England began looking for a new dumping ground for her overflowing prisons. Explorer James Cook's positive report of a fertile and temperate land at the other end of the world, soon it would be called "Terra Australis," which he claimed for the King in 1770, provided just the opportunity the Empire was seeking.

By 1791 two fleets of thieves, poachers, counterfeiters, highwaymen and troublesome lasses, along with a forlorn contingent of soldiers, officers and one highly competent Governor (luckily for them) had carved a home from the wilderness in Sydney Cove. Soon they were starving. With enterprising grit, however, the colony survived and quickly overspread the continent in an energetic rush of exploration and settlement not unlike the tide of manifest destiny that carried Americans across its vast frontier. By mid-century, what began as penal outpost had become one of the last, great jewels in the English crown. But with typical independent spirit, by 1902 Australia was a sovereign nation, well on its way to becoming the prosperous, gregarious beer-loving country that we know today.

Not so familiar is the story of the land itself. The continent is ancient, salty, flat and mostly dry. Repeated submerging by the ocean over eons, combined with a lack of mountain-making geological uplift necessary for the weathering of rock into life-giving topsoil, created thin, nutrient-poor soils—soils that were rapidly depleted by a pattern of colonial settlement and agricultural use designed for the rich, wet climes of England. Plow, cow, sheep, gun, dog, fox, rabbit and tractor—all exotic—transformed Australia's fragile ecosystem into a ravished landscape of eroding gullies, denuded flora


Colin Seis with son and grandson, Winona Farm.

and declining native fauna. The advent of industrialized crop and livestock production after World War II made things worse as tilling and overgrazing continued to deplete what remained of the soil's fertility. To add insult to injury, an epidemic of voracious rabbits pushed the land to the brink.

As I learned, however, a corner has been turned in Australia's assault on its soil.

I witnessed the evidence on the four farms I visited, each rebuilding soil health in its own way. I also heard evidence at the conference on soil carbon (the organic stuff that makes life possible), learning in the process just how far Aussies have come in the effort to overcome their legacy of hard use.

And the lesson I learned was a familiar one: Work with nature, not against it.

Take Mulloon Creek Farm, for instance, located north of Canberra. Its owner, Tony Coote, has a vision of rehydrating the land and by extension, Australia itself. Dehydration occurred as a result of erosion and overgrazing, causing the water-holding capacity of the soil, along with water tables, to decline. To accomplish his goal of rehydration, Tony and the farm staff have implemented a variety of soil-building projects, the most ambitious of which is the repair of Mulloon Creek itself which has become incised in its channel. A series of rock structures has been constructed in the creek, each designed to lift the water a few feet, thus rehydrating the banks. It was familiar work to me —we've done similar treatments in New Mexico—and I knew that the chances of success were good. That's because Tony is working with nature's principles of water flow, not against it as we do when we build dams or line creeks with baskets full of rocks and cement. Nature isn't an engineering problem to be solved by human "ingenuity"; it just wants room to breathe, grow and flow normally across a landscape.

Of course human ingenuity is still critical as I was reminded on the next farm, called Winona, owned by Colin Seis. It is the purpose to which our ingenuity is put that matters. For example, on Winona I learned that not only are Australians rehydrating the soil of their depleted continent, but they are recarbonizing it as well. That might sound rather abstract or academic, but it is vitally essential to our future.

In 1979, after a wildfire nearly burned down the entire farm and sent Colin to the hospital with burns, he came home and decided to rethink the way he had been practicing agriculture. His goal, though he didn't know it at the time, was to rebuild the soil's fertility—its carbon stocks—after decades of practices that had depleted it to an alarming degree. It wasn't a criticism of Colin's father who had followed the rules of farming at the time. Rather, Colin understood that the rules needed to change. The fire suddenly created an opportunity to do just that. Out of the ashes a new farm would emerge.

Colin and his family raise Merino sheep (for wool) on their farm, so Colin decided to take up holistic management, a way of managing

animals on pasture that mimics the graze-and-go behavior of wild herbivores. It's perfectly suited for central New South Wales whose rolling grasslands, decent rainfall (when not stuck in a drought) and lack of native predators make it ideal for raising sheep—lots of sheep. But it is what Colin did next that really caught people's attention.

After a late night of beer drinking at the local pub with a friend, an idea struck Colin: What if he no-till drilled an annual crop into his perennial grass pastures? Meaning, could he raise two products from one piece of land, both a grain crop and animals? Of course, this was an heretical idea. Crops and grazing animals were supposed to be kept separate, right? But that's because the traditional practice on cropland is plowing which eliminates the grasses. But what if you no-till drilled oat or wheat or corn seed directly into the pasture when the grasses were dormant? Would they grow?

Merino ram sale near Gulgong, Australia.

Colin decided to find out. Fast forward to the present and the answer is a resounding, "Yes!" Pasture cropping, as Colin dubbed it, works beautifully and has spread across Australia to some 2,000 farms. As it turns out, nature likes annual and perennial plants to grow together, Colin told me. He also reiterated the old saying that "nature never farms without animals." So, today, Winona grows grain and wool—and if Colin wanted, a harvest of native grass seed, formerly an original food source for the Aboriginals of the area. It is all carefully integrated and managed under Colin's stewardship. It has been productive and profitable, too all of which suggest that pasture cropping could be an important way to feed people globally. It was the right kind of ingenuity at work and it was exciting to see.

Sunset on Winona.

It got better.

A research experiment that compared the soil of Colin's farm to his brother's neighboring farm, which uses conventional agricultural practices, revealed stark differences in soil fertility. The organic content of Winona's soil was much deeper than that of the neighboring farm, indicating that Colin was recarbonizing his land. In fact, the data suggest that pasture cropping may build soil organic content faster than other holistic or regenerative farming practices alone because of the integration of annuals, perennials and animals on one patch of land. More research will be necessary, of course, but Colin is certain it will confirm his hunch that annuals, perennials and animals work best together.

There was one more bit of good news. Rebuilding carbon stocks in the soil has an important positive impact on climate change. That's because plants, via photosynthesis, draw carbon dioxide out of the atmosphere—where it is now consider by scientists to be in excess—and stores large portions of it in the soil where it enriches all kinds of life forms. In other words, Winona today is sequestering more CO_2 in the soil than it did prior to 1979, and that's a very good thing. In climate circles, this is


Norm Smith, Glenwood sheep farm.

called "mitigation" and it's a much-discussed and sought-after climate strategy. On Winona, it's not talk, it's happening. So, in addition to food, fiber and fertility, Colin is "farming" CO_2—all on a few thousand acres!

Thank heaven for pubs and beer, I thought, as Colin drove me to the next farm on my itinerary. Thank God for innovators like Colin Seis, too and for farmers in general. Pasture cropping wasn't invented in a laboratory or classroom; it was invented and field-tested on a farm—a farm of the future, here today.

My next stop was Norm and Pip Smith's sheep farm, Glenwood, located in the lovely hilly country near Wellington. A few months earlier, Norm had been selected the Farmer of the Year for New South Wales, a significant honor considering how many good farmers there are and how big New South Wales is (larger than Texas). A tour of the 6,000-acre farm—they don't call them "ranches" in Australia—quickly revealed why. In a dry year, the farm was exploding with green grass. I saw it everywhere we went: across fields, under trees and right up to the edge of the watering tanks. It was a bright, vibrant color of green, too – the kind that, if I were a sheep or cow I'd say, "Wow!"

I didn't notice a lot of green on the drive to Glenwood, at least not the "Wow" variety. I saw instead a great deal of "industrial green," monocrop fields of canola and wheat planted in rows cheek-to-cheek.

I also saw a lot of brown. Precipitation levels in New South Wales were only half the normal amount for that time of year, which meant that much of the grazing country had a distinct "dry brown" tinge to it. But not Glenwood.

The difference is Norm's management. He switched to holistic planning back in 1999, writing out ecological, financial and personal goals for himself and his family, many of which appeared to have been achieved. On the sheep front, Norm subdivided his pastures into many small paddocks and, using electric fencing, rotationally grazed the animals through them in a rapid sequence with only a few days in each paddock. This provided three big benefits to the land and its grass: the stimulating effect of grazing on the plants (plus the positive effect of hoof disturbance on the soil); the fertilizing effect of free-range manure; and lots of rest between grazing episodes to give plants plenty of time for regrowth.

It was also a familiar story to me. I've now been on enough ranches and farms in enough variety of landscapes (hot, cold, wet, dry, high, low, rocky, flat) to know that holistic management works and works well. It's not a silver bullet, however; it still takes careful stewards like Norm Smith to make it sing. But as Glenwood demonstrated, managing land in nature's image makes all the difference. Green grass doesn't lie. It may still be a puzzle to researchers (I learned that the gulf between farmers and academics in Australia is just as wide as it is in America.), but it's not a mystery to practical-minded farmers like Norm Smith.

It's not a mystery to Eric Harvey either. I visited Eric on his farm, Gilgai, next. Located a few miles from the crossroads city of Dubbo, Gilgai also employs holistic planning and has achieved similar success. In less than seven years, Eric told me during a tour, he expanded the number of grass species on the farm from seven to over 130 using only planned grazing! He had steadily increased the size of the herd as well while lengthening the period of rest between grazings.

More significantly, I thought, was how he did it: by running sheep and cattle together as one herd, or "flerd." Eric said he has run as many as 5,000 sheep and 600 cattle together as a unit, moving them as frequently as every four days. Other than calving and lambing season, when the animals need their own space, he's never had any trouble running sheep and cows together.


Eric Harvey, Gilgai Farm.

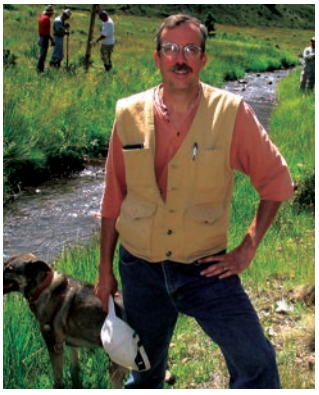

Gilgai Farm sheering shed.

They get along fine, he said. Nature, in fact, likes mixed-species grazing, Eric said, because animals complement each other in such ways as what they eat, the composition of their manure and the way their hooves interact with the soil. Having two different types of livestock also buffers Eric's finances against fluctuations in the marketplace.

Did anyone else in New South Wales run a flerd, I asked? "Not that I'm aware of," he responded. Why not? He shrugged. "It's a mental thing, I suppose," he said. "Cattle and sheep are supposed to be kept apart. We're not supposed to manage them holistically either," he added. "It's not supposed to work." But it does. I saw and heard the evidence with my own eyes—8,000 miles from home. I saw, once more, that nature still has the best ideas.

Good on the Aussies, I say. Whether it's rehydrating the land with innovative creek work, feeding people and storing carbon in the soil with pasture cropping, growing bright green grass or running a flerd, the willingness of Tony, Colin, Norm, Eric and their families to try something novel and make it work is both impressive and hopeful.
I can't wait to return to see what else is going on Down Under.

This article was originally published in *Farming Magazine*, Winter 2011. You can read more of Courtney's writings at: www.carbonranching.org and www.awestthatworks.com



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America's New Agrarians: Policy Opportunities Support New Farmers*

By Professor Neil D. Hamilton

Why the new farmer generation is so important to America's Future

A strong argument can be made that no issue is more important to the future of U.S. agriculture—and thus to our food supply and social sustainability—than identifying the next generation of farmers and ranchers who will steward the land and produce our food. The great news is that our nation is experiencing a surge of interest by people who want to be farmers and ranchers—a generation of New Agrarians. The interest of young people in food and agriculture is almost overwhelming and starkly different from past decades when few in the younger generation wanted anything to do with farming, raising livestock or working the land. But the times are changing and today the nation has a real opportunity to bring new energy, fresh ideas and young talent to the farm and food sector in both rural areas and urban communities alike. This penchant on the part of a new generation of potential farmers, many from non-agricultural backgrounds, will challenge the traditional agricultural system and culture in many ways. This movement cuts across all economic, geographic, racial, ethnic and educational distinctions.

The emergence of a new generation of people interested in farming is important to our nation for many reasons. The desire to farm, become landowners and even live in rural areas is a critical change in attitude. New farmers are helping to reverse the downward trends in the total number of farmers and in the rural population of the U.S. while lowering the average ages in both groups. New farmers are bringing a new range of skills, education, talents and creativity to rural areas as well as an entrepreneurial drive. It may be too easy to generalize about the motivations of New Agrarians, but they generally tend to bring also an enlightened attitude to resource conservation and sustainability and an interest in embracing environmental stewardship.

"Initial expectations at planting time suggested yields averaging a record 166 bushels per acre, but deteriorating growing conditions throughout the summer led USDA to reduce yield expectations...Yields are now forecast at 122.8 bushels per acre, the lowest since 1995." U.S. Drought 2012: Farm and Food Impacts, USDA website (*www.usda.gov*)

* A longer version of this article was published in the *Fordham Environmental Law Review* (Neil D. Hamilton, *America's New Agrarians: Policy Opportunities and Legal Innovations to Support New Farmers*, 22 Fordham EnvironmentaL Law Review 523 (Fall 2011)); it was developed for the Fordham Environmental Law Journal Symposium, "Analyzing Regional Foodsheds and Local Foods: The Role of Environmental and Land Use Policy," held March 4, 2011, in New York City. The article is the third in a related series of essays dealing with the future of America's food and agricultural system. Readers are encouraged to consult the other two companion articles: "Moving Toward Food Democracy: Better Food, New Farmers and the Myth of Feeding the World," *Drake Journal of Agricultural Law*, and "Farms, Food and the Future: Legal Issues and Fifteen Years of the "New Agriculture," *Journal of Environmental Law and Litigation*, 2011.

Many New Agrarians see involvement in food production and agriculture as imbued with a dimension of public service, and see producing healthy food and restoring land as an important social good, in addition to being an economic opportunity. They are committed to the ideal of community and see themselves in relationships with their consumers, neighboring farmers, the land, their animals and the communities in which they live. One important but often overlooked component of the New Agrarian movement are older, second-career people who, by either returning home or moving to rural areas, are bringing their employment experience and skills, as well as capital and other wealth, to their farms/ranches with the goal of retiring in place.

Focusing the nation's attention on the needs of a new generation of farmers/ranchers and their role in the future of local and regional food systems presents an important opportunity for policymakers and public officials. The people interested in food and farming come from all backgrounds. Women, for example, are playing a leading role in the future of America's food and farming system, especially in relation to local foods, small farms and beginning farms. Another unique group with the desire to farm are the nation's young veterans. Helping these potential new farmers—literally turning combat boots into cowboy boots—represents an important and symbolic commitment by the U.S. to creating new farms. It is also exciting to see the interest in urban agriculture and expanding food production within and near our cities. In the last year, officials in a number of major cities have amended their zoning codes to authorize urban farming, thus creating opportunities for community gardens, local markets, and raising poultry—the "city chicken" movement.

What can we do locally to support New Agrarians?

There are a variety of policy challenges and opportunities related to efforts to support new farmers, including helping them to build the equity needed to begin farming; providing training and education for people with no background in farming; increasing their access to farmland through innovative leases or purchases; and developing profitable marketing opportunities for their products. While the challenges relating to new farmer policy are expansive, the good news is that all across the nation there are individuals and organizations working to address particular dimensions of the new farmer policy puzzle.

One result of the growing consumer and political interest in food is that in the last year a number of major U.S. cities have initiated policies designed to promote urban agriculture and to encourage people interested in producing food. The cities include New York, Baltimore, Seattle, San Francisco, Kansas City, Memphis and Los Angeles, and they have all enacted new "urban agriculture" zoning ordinances or announced studies of their food systems. Many of these efforts involve creating a "food policy council," an officially sanctioned body of representatives comprised of both public officials and private citizens drawn from across the local food and agriculture sector. Supporting new farming operations should be part of the work of food policy councils. Here are 10 ways that can happen:

1. Identify new farmers as one of the key issues or priorities. As food policy councils work on healthy food access and questions related to creating new food enterprises, supporting new farmers may be overlooked. Identifying this issue as an important first step can raise the awareness of and attention to new farmer issues. A follow-up step could then be to focus a task force or committee focused on the topic.

2. Create financial opportunities for existing farmers/ranchers and new farmers/ranchers. For there to be healthy food, there have to be farmers; and for farmers to thrive, they need real income and profits. It is also important to

Senator Tom Harkin (D-Iowa), Matt Russell (farmer and Drake Law School - Food and Policy Project Coordinator), and Professor Neil Hamilton enjoy the Des Moines Farmers' Market, Des Moines, Iowa. (Photo courtesy of Neil Hamilton)

recognize that in order to be successful in helping create new farmers, existing farmers must be doing well financially. The experience in most communities is that efforts to expand direct marketing for farmers help to generate additional markets and opportunities. By focusing on the expansion of direct marketing, a food policy council can address food access and, at the same time, zero in on marketing techniques attractive to new farmers.

3. Survey and identify existing new farmer related efforts. There may already be groups or organizations focusing on new farmer issues in the area, such as community gardening and urban agriculture efforts, the County Agricultural Extension office, or a local FFA chapter. By identifying the existing capacity and interest in serving new farmers, the food policy council can partner with other groups and incorporate their work into the more comprehensive goals of the council. If there is a "buy fresh, buy local" food marketing initiative in the region or a state-run "land link" program to match landowners with prospective farmers, resources may already be available for the council.

4. Inventory the existing agricultural infrastructure. It is important to understand the health and structure of the existing farming economy. By studying the resources already in place—for example, processing, markets, feed and veterinary services, USDA county offices, farm organizations, agricultural lenders, and agricultural extension programs—the council will have a better understanding of the potential to create and support new farmers, as well as the ability to identify the resources and institutions in place for future cooperation. It is important to remember that supporting new farms takes more than just farmers; it also requires a whole system and infrastructure of services and suppliers that enable farms to operate efficiently.

5. Inventory and identify available land resources. Land is the key to farming and food production, and land access is a critical barrier for new farmers. The council can play an important role by helping identify land that may be available for farming. For example, the council could do an inventory of available public land, such as the "Diggable City" study conducted by students from Portland State University for the Portland-Multnomah County Food Policy Council (*www.diggablecity.org*). Available land may be in the city or nearby, and it may be privately owned or publicly held. The council can also try to implement a local version of the "land link" program (*www.cfra.org/landlink*) that creates a way for owners of farmland, such as farmers planning to retire, to be put into contact with people interested in trying to farm.

6. Create robust urban agriculture policy. One motivation for creating many local food policy councils has been the desire to focus official attention on the value of expanding urban agriculture and producing food within the city. While such agriculture may function on a smaller scale than typical farms, policies related to urban agriculture help to expand the context and understanding of who is a farmer and what a farm may look like. By considering how urban

agriculture can generate new farm and food enterprises, local food policy councils can develop policies that are much more comprehensive than simply expanding opportunities for more community garden plots.

7. Develop programs to recruit and train new farmers. If the council is successful in identifying opportunities for new farmers, then a key step will be to recruit, train and support new farmers. There are many examples of successful new farmer incubator and training projects in the country. In some communities, farmers markets are leading efforts to recruit and train new farmers in programs such as New York City Grows (*www.grownyc.org/greenmarket/nfdp*). Cities can also develop innovative programs designed to attract new farming residents by offering low-cost access to vacant lots or incentives for new urban homestead enterprises.

8. Link with the schools in efforts to support new farmers. A key component of any food policy council's work will be attention to school food, not only for the purposes of nutrition and education, but also for the opening of markets for locally grown food, a concept known as the "farm to school" program. Schools can provide an important market for institutional purchases of locally grown and processed food and can be important partners in helping grow a local farm and food sector. The schools may also be able to take part in programs like the new Food Corps initiative (*http://foodcorps.org*) under which AmeriCorps volunteers help support school gardens and food-related projects. These gardens can be important training grounds for new farmers.

9. Expand opportunities for direct marketing. It is hard to overstate the importance of direct marketing, such as farmers markets and community supported agriculture (CSA or subscription farms) in the movement to improve local food systems. Communities are increasingly using various forms of direct marketing to improve access to healthy food and to provide various forms of food assistance such as SNAP benefits. Because direct marketing has low barriers to entry—meaning it doesn't cost much to be involved—this method is especially important to new farmers and entrepreneurs. Many city policies—such as bus routes and schedules, and access to public property for farmers' market space—can have a direct impact on the success of direct farm marketing.

Des Moines Farmers' Market, Des Moines, Iowa.
(Photo by Neil Hamilton)

10. Address new food entrepreneurs and artisans, as well as new farmers. While there is a growing interest on the part of many people, young and old, to become farmers, there is similar interest by many people to be involved in food production and marketing. The idea of opening a bakery, making wine or cheese, keeping bees, or engaging in other food related occupations is a dream held by countless numbers of people. By keeping in mind how local policy can impact the ability and willingness of people to invest in new food-based businesses, as well as influence the success of new entrepreneurs, a food policy council can help expand the food system and stimulate additional jobs and economic opportunities.

Resources for New Agrarians

- The MOSES Farmer-to-Farmer Mentoring Program pairs experienced organic farmers with transitioning organic farmers to promote the successful adoption of organic methods through one-on-one interaction. *www.mosesorganic.org/mentoring.html*
- Farm Beginnings® is a Land Stewardship Project (LSP) initiative that provides participants a wide range of opportunities to learn firsthand about low-cost, sustainable methods of farming. *www.landstewardshipproject.org/farmbeg.html*
- Beginning Farmer and Rancher Development Program (BFRDP) provides beginning farmer education for adult and young audiences in the United States. Traced back to the advent of the 1862 and the 1890 Morrill Land Grant Acts, the Food, Conservation, and Energy Act of 2008 appropriated $75 million for FY 2009 to FY 2012 to develop and offer education, training, outreach and mentoring programs to enhance the sustainability of the next generation of farmers. *www.nifa.usda.gov/fo/beginningfarmerandrancher.cfm*
- Farmer Veteran Coalition assists veterans to become the future of American agriculture. *www.farmvetco.org*
- Women, Food and Agriculture Network is a community of women involved in sustainable agriculture. Women own nearly half the farmland in the U.S. today, but are rarely represented on the boards of policy-making bodies. *www.wfan.org*

For more resources, see Severine Tscharner's article on page 13.

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Agrarian Poetry: Voices for Our Time

by Gary Paul Nabhan

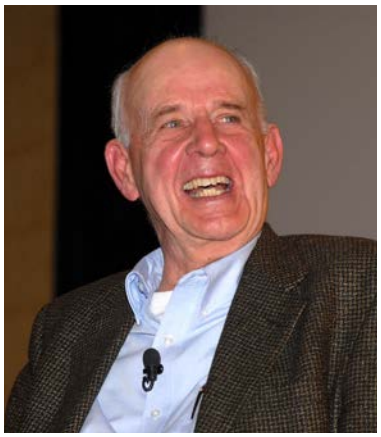
Agrarian poetry plays many roles in our society and takes many forms—including cowboy recitations, sheepherder's ballads, farmers' prayers and prose-poems, sea shanties and such. These poems most certainly entertain and humor us; they can make us laugh or weep, or arouse wonder, anger or remorse.

But cowboy poetry, farmers' prose-poems and other agrarian literature also help us remember/re-collect the values, skills and expressions of our predecessors on the land. They can help us re-story and thereby restore the land itself with elements of the past that deserve to be held dear in the present moment. With less than one and a half percent of all citizens of our country identifying themselves as farmers or ranchers in U.S. census interviews, the poetry that keeps these skills and expressions alive is needed now more than ever before in American history.

However, there is one function of this poetic tradition that is known well among its practitioners but remains little discussed among society at large. That is its visionary or prophetic function. I wish to focus on this particular function of agrarian poetry because more than ever I feel that diverse agrarian voices need to be heard for what they are telling us about how to live—or not to live—in the future.

First off, let me paraphrase my friend David Orr's definition of "agrarianism," one that he offered as part of a reflection on and celebration of the work of Kentucky farmer and poet Wendell Berry:

"Agrarianism… is no small, whittled-down philosophy for rural folks. It is, rather, a full-blown philosophy rooted in the realities of soil and nature as 'the standard' by which we also come to judge more. It is grounded in farming, but is larger still. The logic of agrarianism …unfolds like a fractal through the divisions and incoherence of the modern world."



Wendell Berry. (Photo by Gene Peach)

David's definition may be important in its own right because it immediately clarifies the idea that a tradition like cowboy poetry is of immense value—not only to today's ranchers, cowhands, camp cookies and other riders on the range—but to humanity as a whole. Its legacy to society is not merely its artistry but its land-based values, its rich vision of what our complex relationship to the earth and to each other should be. Orr argues that as the modern industrialized world becomes more chaotic, incoherent, oppressive and divisive, the logic (and value) of agrarianism "unfolds like a fractal" so that its importance is enhanced, and it develops even greater significance for guiding our troubled society.

Wendell Berry (2003, p. 24) himself agrees with Orr that agrarian poetry through the sheer power of its cautionary tales, often warns our society against continuing down certain perilous paths. Nevertheless, Berry concedes, its voices have not been widely heard, let alone heeded:

"We agrarians are involved in a hard, long, momentous contest, in which we are so far, and by a considerable margin, the losers…My life as an agrarian writer has certainly involved me in such confusions, but I have never doubted for a minute the importance of the hope I have tried to serve: the hope that we might become a healthy people in a healthy land."

The contest to which Berry refers is not simply the one evident in the Rural/Urban divide which plagues much of the West today; it is about the rich and complex relationships of our cultures to the land itself wherever we live and work. Of course, some of the stories of those relationships demonstrate ways of living with the land's constraints and conditions, but others reveal their rough edges and flaws. Without being polemical, poetry can expose the damage that has been done to our watersheds and foodsheds, and therefore to our communities and our bodies whenever these relationships get out of synch.

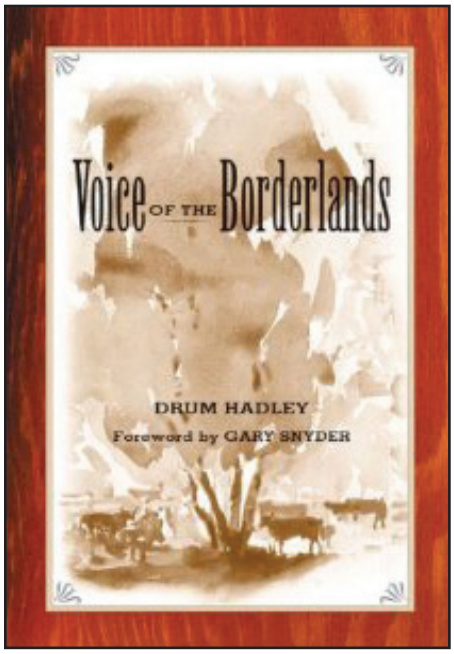
This damage is glaringly evident to any storyteller living and working in the U.S. Southwest, from Texas through New Mexico and Arizona to California. These four states have contributed no less than one-fourth of all the ranchland and farmland lost in the U.S. over the last quarter century as our ruthless economy has stripped and mauled such lands into submission. What Sunbelt developers call housing developments should truly be called arrested development because they seldom allow the "unfolding" of opportunities and insights that Orr champions in his definition of agrarianism. We have all witnessed places once highly regarded for their abundance of game, the prodigiousness of their herds and flocks, and the diversity of their fruits and roots that are now designated as "food deserts" by the USDA. We have all heard urban planners claim that the highest and best use of the water now used to grow food and forage would be to shunt it into cities for more lawns, swimming pools, fountains, golf courses and shoddy subdivisions disguised as gated communities. We have all been insulted by the hip but cynical urban intellectual who regards the cowboy's life as merely quaint, rural values as undeniably retro, and traditional agriculture as something only to be cherished by romantics who wish to ignore or impede the acceptance of post-modern realities.

I would argue that the images, ideas and values of our best agrarian poets are our culture's antibodies that will potentially protect us from a host of diseases in the future, and that dismissing the preoccupations of agrarian poetry as things of the past is both problematic and perilous. Agrarian poets have arisen in many societies whenever estrangement from the land threatens to undermine the very core of our existence. Listen to theologian Ellen Davis (2009, pp. 120-122) who has argued that agrarian poetry and prophecy have historically played essential roles in righting the course of cultures gone astray:

"... If the message of new agrarian writers may be rightly called 'prophetic,' the more important fact is less widely recognized: The message of the earliest prophetic writer in the Bible was distinctly 'agrarian.' The eighth-century prophets Amos and Hosea were probably the world's first agrarian writers…This sudden outburst of rural prophesy, apparently unprecedented in the depth and range of its vision and replete with language and images that evoke the experience of farmers, seems to have been prompted by a large scale transformation of both the land and the rural economy."

In essence, agrarian poets and prophets have emerged from farm and ranch country whenever their way of life has been threatened by political, economic or military forces that have ignored or even broken the covenant between rural communities and the land. It is no wonder that America witnessed a flush of agrarian poets such as Walt Whitman, Henry David Thoreau, Ole Rolvaag and Hamlin Garland as the Industrial Revolution reached the East and Midwest; another with John Steinbeck, Robinson Jeffers, Robert Service and H. L. Davis reached the West Coast; and a third with Wallace Stegner, Keith Wilson, Richard Hugo and James Welch as it reached the Intermountain West. We need not pretend that Wendell Berry is the only contemporary who maintains such prophetic traditions although he remains our best. Oddly, perhaps the other greatest agrarian voices of

the last century have been rural European writers such as Jean Giono, John Berger, Ranier Marie Rilke, Gustaf Sobin and Italo Calvino. But we need not look further than our back doorstep in the windswept West or even in the north woods of Maine and Minnesota to find the resurgence of agrarian poetry alive and well in North America. The current generation includes Wally McCrae in Montana, Linda Hasselstrom in South Dakota, Drum Hadley in Arizona, Sharon O'Toole in Wyoming, Vess Quinlan in Colorado, Russell Libby in Maine, Gary Holthaus in Minnesota, Paul Hunter in Washington and Charles Goodrich in Oregon.



One might ask how we distinguish agrarian poetry from other forms of agrarian philosophy, political activism or prophetic prose. I would argue that the poet's use of sensuous imagery and compelling narrative rather than a reliance on didactic rhetoric is what sets the agrarian poets apart from their brethren. They remind us through visual images, sounds, fragrances and flavors what we may be in risk of losing and what we need to tenaciously keep dear.

The reason that the more sensuous of the agrarian poets are more effective in reaching us has been elegantly stated by David Stendl-Rast (pp. 19, 34):

"Common sense tells us there is nothing in our intellect that did not enter through the doors of perception. Our loftiest concepts are rooted in sense experiences. Only by going to the roots can we 'dig' great ideas. People who are too fastidious to dirty their hands by coming to grips with concepts at their roots are left with notions that are literally 'cut and dried.' Cut off from the senses, dry reasoning turns into non-sense….

[In contrast], healthy sensuousness rises from root to vine to leaf to fragrant blossom. With poetry, it is not all that different. No one reads poetry in search of moral improvement; it is the sheer beauty that draws us…Thus, quite unawares we get accustomed to [a new] way of looking, which prepares us to face the demands of real life with [an] unflinching courage."

As an example of this sensuousness, let us recall the first and last few verses of Wally McRae's haunting homage to "the ghosts" looming within many obliterated Western landscapes, "Things of Intrinsic Worth."

Remember that sandrock on Emmells Crick
Where Dad carved his name in ' thirteen?
It's been blasted down into rubble
And interred by their dragline machine.
Where Fadhis lived, at the old Milar Place,
Where us kids stole melons at night?
They dozed it up in a funeral pyre
Then torched it. It's gone alright…
There's a railroad loop and a coal storage shed
Where the bison kill site used to be.
The Guy Place is gone, Ambrose's too.
Beulah Farley's a ranch refugee.

But things are booming. We've got this new school
That's envied across the whole state.
When folks up and ask, "How's things goin' down there?"
I grin like a fool and say, "Great!"
Great God, how we're doin'! We're rollin' in dough,
As they tear and they ravage The Earth.
And nobody knows…or nobody cares..
About things of intrinsic worth.

Of course, some of the poetic prophets have made us realize just how we're losing what we value by confronting the cold-hearted materialism of those who are unsettling the West. Listen to the conversation among businessmen whom Drum Hadley overheard in the Palm Court Restaurant in New York City, as laid down in his poem "Our Lands in the Belly of the Beast."

Take them, invite them out to lunch, don't get attached,
It's money, it's property, it's real estate, it's things, you say.
Do you want to sell?
What do you want to pay me to sell it for you?
We made fifty or sixty million. He died penniless.
His children asked us for one thousand dollars for the funeral.
It was tax deductible. Of course, we gave it to them…"

While some of these prophetic poets dwell on what damage segments of humankind have obviously wrought upon us all, others focus on how one responds to the ways nature itself is changing, with or without human prompting. Consider these excerpts from Linda Hasselstrom's "Drought Year" with their sense of foreboding.

I dreamed I slept alone in a drought year,
and now I do.
I lie in the short grass;
water is a dream.
All day I was fuel for the sun
burning like wildfire over a dry land…
I dream you died in a drought year,
and you did…
I dreamed myself a dry woman
and I am, the juice gone
out of me. My skin is fragrant
with prairie odors.
I am drying grass, wind-bent.
Long tough roots grapple
deep into the baked prairie earth.
Leaves die, but roots dream
in crumbled sod,
wait for rain.

Responding to another omen, Russell Libby wrote "Pledge" when he saw this headline: "Now the Pentagon Tells Bush: Climate Change Will Destroy Us":

If this is true,
that the world we have known
will not be,
that ice and storms from the North
will be matched by dry wind from the South and West,
where else to be but here?
…We could move with the many,
but that only concentrates the problems to come.
And the mysteries, the questions---
I'm curious about what might still grow where.
The Russett from the Bean Road should fruit soon.
Sheep still make sense, for now; chickens, too.
The energy of seeds, their sharing.
Vikings ate elymus, the wild rye-grass, for grain;
Can we, too?
..If the world we know is to crumble,
the world we create can only start where we are.

My last breath will still carry hope
for the future,
and love for the present, and you
though many dark days may yet pass.

Perhaps because of the constant challenges faced by farmers and ranchers merely trying to maintain their hold on some land, their poets are exceedingly willing to joyously express their gratitude when a windfall comes their way. In "Where Hope Springs," Paul Hunter describes the fortuitous moment when

…below the barn in the pasture
Edwin one day deep in
the worst of the Depression found
a soft swampy spot where
water seeps out of the ground

dug in there for the catchment
formed up and poured the cement
framed in and lidded a pumphouse
commenced to watering livestock
seventy-five years or more

no matter what else became of
the herds the crops every dry spell
run clean like a cloudburst
spilling sweet water aplenty
hope never once has run dry.

John Dofflemeyer, cowboy poet of the Sierras, reminds us that this is an era during which we are best to huddle with other "Firekeepers."

No smoke, no bright Hudson Bay
colored stripes, stirring flames,
we look outside to gray silhouettes

of ridges hazed away, still dry
and waiting for any kind of rain.
Oak leaves and twigs in the dark,

split cordwood aflame, you kept
the coals alive for a week, ready
for warm words anytime of day.

You are forever exposed there
in the camera of our minds—
huddled together stirring flames.

I'll leave off with my own ode in the face of uncertainty, "Sowing Circle."

We sow these words
like seeds to the wind
hoping they will find
the earth they need
to endure the drought
and bear the fruit
for us to eat in a future
more unfathomable than ever.

After dawn, we moved
stone next to stone
to terrace a slope
with the lingering hope
of keeping a little earth in place
even when everything around us
seems to be raging loose.

Such measly gestures
done with rough hands
burning minds pumped up hearts
cannot forestall any flood nor any drought
but you tell me how just sitting on our asses
might ever keep us rooted or fed
in the face of such uncertainty.

In weaving such images into agrarian prophecies, cowboy poets and poet-farmers somehow transform the bitterness of life on this earth at this moment into something sweet and redemptive. We become, as Rilke put it, "…the bees of the invisible. With total absorption, we gather the nectar of the visible into the great golden honeycomb of the invisible."

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What's In An Olive?

McEvoy Olive Farm near Petaluma, northern California

Can the carbon content of soil be doubled in less than ten years? It has on McEvoy Ranch, a 500-acre organic olive ranch, with benefits including increased soil fertility, water holding capacity, and carbon sequestration.

Settled in the mid 1800's by Swiss Italian immigrants, the native hardwood rangelands that defined the area were well suited to small-scale dairying. In the early years, many of the abundant oaks and bays were harvested for firewood to help meet the growing demand for fuel in nearby San Francisco, and for the needs of the farm itself. Very little of the farm was actually tilled, due to the predominantly steep terrain, though hay and other field crops were grown on the more level meadow areas.


Dr. Jeffrey Creque directs the McEvoy compost program.

When Mrs. Nan T. McEvoy purchased the farm in 1991, the infrastructure of the dairy was rundown, but the land itself was in good shape. Abundant water, extensive stands of native perennial grasses and mature woodlands that characterize the landscape were in good condition. With a love of Italian cuisine, Mrs. McEvoy soon decided that rather than continue with livestock production, her goal would be to

2% Solutions is a new publication of the Quivira Coalition, written by Courtney White and posted on Quivira's Carbon Ranching website: *www.carbonranching.org. 2% Solutions* case studies will highlight practices that soak up CO_2 in soils, reduce energy use, sustainably intensify food production and increase water quality.

produce one of the finest olive oils in the world. With a commitment to not to remove any of the trees on the property, she began to plant olives on about 80 acres on the less-steep areas of the ranch.

Dr. Jeffrey Creque came to the project in 1997 to address the question of what to do with the waste products from the ranch's new olive oil mill. With a Ph.D. in rangeland ecology and decades of experience as an organic farmer, Jeff set out to help Mrs. McEvoy accomplish her goal with a goal of his own: raise the carbon content of the soil from less than 2% to 4%.


Renewable energy and regenerative agriculture working together.

Creque and his co-workers embarked on a soil-building strategy that included: 1) applying lots of compost, made on-farm from olive mill waste, livestock manures and landscaping debris harvested on the ranch; 2) avoidance of tillage via the maintenance of a permanent cover-crop beneath the olive trees; 3) seasonal rotational grazing of sheep through the orchard; and 4) riparian area restoration to address downcutting gullies on the property.

Only 15-20% of an olive is oil, Jeff said, the rest is water and solids. Historically in the Mediterranean region, this organic material would accumulate at the milling site or be dumped into a nearby river or the sea, until the practice was banned in the 1970s. Today, handling and disposition of olive mill waste remains a challenge for olive oil producers. Jeff's idea at McEvoy was simple: compost all of that material and return it to the soil of the olive orchards, increasing their fertility. In this way, a problem became a benefit.

"Olive oil is like butter," Jeff said, "meaning it is produced from the current season's photosynthetically-derived carbon. If the farm exports only oil, it essentially removes nothing permanently from the soil. By avoiding tillage and returning all residuals to the land, the olive oil agroecosystem takes in more carbon from the atmosphere than it emits. Done well, olive oil production can be an essentially permanent, regenerative form of agriculture."

Data backs him up. Dozens of soil samples are taken every year from all over the farm and sent to a laboratory for analysis. While results have shown year-to-year fluctuations in the organic matter content of the soil, mostly due to weather and sampling variables, the trend has been clear: upward. In fact, after ten years the carbon content of the soil began hovering around 4%. This means the farm is sequestering more CO_2 than it did back in 1997; it's more productive and holding more water in the soil.

Jeff doesn't want to stop there. With the restoration of the ranch's riparian areas, a new challenge —and carbon sequestration opportunity —has emerged: managing surplus riparian vegetation (especially willows) for compost production. As the overall productivity of the ranch has increased, the volume of carbon sequestered in standing biomass and soils, and potentially available for composting, has also increased.

"There's no reason to think that we can't increase soil carbon in our agricultural systems to levels above those that would occur without management," Jeff told me. "Besides, there are no downsides to trying and lots of upsides, especially for agricultural productivity, sustainability and climate change mitigation. If we can manage our soils to store more carbon, we'll also enable them to store more water, while reducing the volume of CO_2 in the atmosphere. That's a BIG upside."

Jeff notes that millions of tons of organic waste—food, grass clippings, branches, manures—go into landfills every year across the nation. Why not compost them instead and divert them to farms and rangelands where they could provide multiple benefits? Of course there's a cost to hauling this material around, but it could be offset by increased ecological productivity and potential carbon credits, not to mention benefits to the Earth's climate system.

McEvoy also employs renewable wind and solar thermal energy on the farm. However, accomplishing energy self-sufficiency has proven more difficult to achieve than the carbon work. "Increasing soil carbon," Jeff said, "is relatively easy. Overcoming the bureaucratic challenges to installing sustainable energy systems has proven much more difficult."

As for the economics of it all, McEvoy olive oil and associated products (including a body care line) are high-end goods that have established themselves in the marketplace.

What's in a little olive? A lot.

For more information on the McEvoy Ranch:
www.mcevoyranch.com

For more of Courtney's writing:
www.awestthatworks.com

Quivira Coalition Annual Conference DAY 1

Range Workshops

Practical Skills and New Ideas for Resilient Ranching

Wednesday, November 14, 2012 - Embassy Suites, Albuquerque, N.M.

FRED PROVENZA
Dept. Wildland Resources, Utah State University
For the past 30 years, Fred's group has consistently produced ground-breaking research that laid the foundation for what is now known as behavior-based management of livestock, wildlife and landscapes. BEHAVE (Behavioral Education for Human, Animal, Vegetation and Ecosystem Management) is committed to integrating behavioral principles with local knowledge to enhance ecological, economic, and social values of rural and urban communities and landscapes.

GEORGE WHITTEN & JULIE SULLIVAN
San Juan Ranch, Colo.
Ranching in Saguache, Colorado, George and Julie are deeply committed to sustainable ranching and farming based on their values: increasing the biodiversity of their land, providing wholesome food at an affordable price, and raising their animals in a humane and loving manner. In this workshop they will explore ideas and practices that can help each of us restore, rebuild, reimagine and reconsider how to adapt our ranches and lives to thrive in this changed world.

Quivira Coalition ~ 11th Annual Conference

How to Feed Nine Billion People from the Ground Up

Soil, Seeds, Water, Plants, Livestock, Forests, Organics and People

November 14-16, 2012

Embassy Suites Hotel, Albuquerque, New Mexico

Global human population is projected to reach nine billion by 2050, which means food production will need to expand by 70 percent to keep pace. Fulfilling this demand will place unprecedented pressure on ecosystems, including the planet's grasslands, as competition grows for scarce natural resources. Figuring out how to meet this daunting challenge while ensuring the health of land, water, wildlife and people will be one of the great tasks of the 21st century. In this conference, we will explore a variety of innovative practices that are already successfully intensifying food production while preserving, maintaining and restoring the natural world. Speakers will share their hands-on experience and ideas for feeding all life—from the ground up.

The world faces no greater challenge than how to provide sufficient food and water for so many people without destroying what's left of nature. A corporation-driven second "Green Revolution" isn't the answer, but neither is starvation. As an ALL-STAR lineup of speakers will explain, the answer lies with practices that work with nature, not against it. Don't miss this extraordinary opportunity! - Courtney White, Executive Director, Quivira Coalition

Featured speaker Gus Speth is a Professor of Law at the Vermont Law School in South Royalton, Vermont. Speth is also a Distinguished Senior Fellow with Dēmos and with the United Nations Foundation, both in New York City. From 1999 to 2009, he was Professor in the Practice of Environmental Policy at Yale where he served as Dean of the Yale School of Forestry and Environmental Studies. Throughout his career, he has provided leadership and entrepreneurial initiatives to many task forces and committees whose roles have been to combat environmental degradation. This includes the President's Task Force on Global Resources and Environment, the Western Hemisphere Dialogue on Environment and Development, and the National Commission on the Environment. His new book, *America the Possible*, was released in the fall of 2012.

Feature Speaker
Gus Speth
Award Winning Author and Former Presidential Advisor

Dr. Miguel Altieri
Gabe Brown
Don Bustos
Dr. Jill Clapperton
Katherine DiMatteo
Gloria Flora
Jim Howell
Dr. Molly Jahn
Dr. Michael Mazourek
Sandra Postel
Allan Savory
Colin Seis
Lisa Shipek
Julie Sullivan & George Whitten
Gordon Tooley
Courtney White

Register online: *www.quiviracoalition.org*

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