



Profiting From the Sale of Carbon Offsets: A Case Study of the Trigg Ranch

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One result of growing concerns about climate change has been the development of a variety of market-based mechanisms aimed at incentivizing agricultural landowners to manage their lands in ways that mitigate climate change through carbon sequestration. Most of this attention has been aimed at engaging forest and farm owners in the voluntary carbon market, but in recent years there has been a growing interest in the potential for rangeland managers to contribute to this effort.^{1,2} In 2008, the Chicago Climate Exchange (CCX) initiated a program that would allow ranchers to participate in the US voluntary carbon market by generating and selling carbon credits (see Gosnell et al., this issue, for more information on the program).

The Trigg Ranch was one of approximately 1,000 ranch operations to participate in the CCX program, enrolling 50,000 acres under the CCX Sustainably Managed Rangeland Soil Carbon Sequestration Offset Project Protocol in 2009. The Trigg family earned \$90,000 by selling the carbon credits they generated to a Texas corporation. Their experience exemplifies the range of challenges faced by landowners attempting to transition to carbon-oriented grazing management; it is also notable in that the Trigg Ranch is one of the few to generate income from carbon credits and to include state lands in its enrollment.

Although the CCX program is no longer in existence, we suggest that insights from the Trigg Ranch experience will be of interest to *Rangelands* readers considering transitioning their grazing systems to sequester more carbon, and/or participating in future carbon markets should they develop.

The Trigg Ranch

The Trigg Ranch comprises 52,000 acres of rugged rangeland in the mesa country of northeastern New Mexico approximately 30 miles northwest of Tucumcari in the Western Great Plains and Central Great Plains Land Resource Regions. Established in 1918 by Steve Trigg Sr, the ranch supports a family-owned-and-operated cow-calf

operation and is now in the hands of the third, fourth, and fifth generations of Triggs. The ranch is set up as a trust and overseen by the entire Trigg clan, comprising seven different families—all grandchildren of Steve and Bess Trigg. Their collective vision was to create an entity that was managed by the family and for the family, with an emphasis on continuity and sustainability of a way of life, rather than on profit and short-term gain for individuals. Kristen (née Trigg), Rick, and Caitlin Holmes manage the day-to-day operations of the ranch; however, the overall goals of the ranch are broadly discussed by the whole family and all major decisions are reached by consensus in a way that reflects the strategy of, according to Kristen, an environmentally, financially, and socially sustainable ranching operation.

Grazing Management Practices

In 2002, following the death of Steve Trigg Jr, the Trigg family decided to initiate a transition to holistic management (HM), a decision-making framework that integrates systems thinking and adaptive management,³ to facilitate the process of restoring badly degraded rangelands.

Prior to that, Steve Trigg had been resistant to changing his approach to grazing management. Grasslands had deteriorated under continuous and heavy cattle grazing, which had been in place since 1918. As such, the ranch was characterized by severe soil erosion and patches of bare ground. "You could see something wasn't working, or you could see a better way of doing something. And he just didn't want...anybody's ideas," said daughter Kristen Holmes. Having perceived this degradation, she and her sister, Sally Trigg were drawn to an alternative way of managing based on what they had observed on other ranches practicing HM. "Seeing the grass that was grown," recalled Kristen, "and how much better the land was." In particular she was impressed by the improvement in the bare ground: plant ratio; the appearance and increase of cool-season grasses resulting in a more diverse plant community; the

increased number of water sources and improvement in water quality in riparian areas; better utilization of all grasses (evidenced by more evenly grazed pastures and paddocks); and gentle, easily handled cattle. These were all major incentives for the adoption of a new approach to management.

In 2002–2003 Kristen and Rick attended a 6 week intensive HM course through the Savory Center for Holistic Management (now Holistic Management International) but found the prospect of implementing a new management system on a ranch with an essentially wild herd of cattle daunting, both financially and technically. Instituting rotational stocking—to change the distribution of grazing—required new fencing and water systems, for which they received some financial assistance through the USDA Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP).

One of the major challenges they faced was modifying the behavior of the cattle, which, in the Holmes' experience, are often resistant to changing their location and grazing patterns if they have been under extensive grazing management for many years. According to both Kristen and her daughter Caitlin, a cow that has grazed in one place for many years will continually want to return there, even "to where there's absolutely not a blade of grass."

Faced with these hurdles, they decided to hire a grazing management consultant, Jim Howell, who advised them to initiate change gradually, with the goal of fully implementing rotational stocking on the ranch within 10 years. "Go really slow," he told them. "You know, if you put most of these practices into use ... in 10 years, you'll be doing really good."

With Howell's support and encouragement, the Holmeses began the slow process of transitioning the entire management system of the ranch.⁴ Using the 14 existing pastures (ranging from 1,000 to more than 6,000 acres), they began moving the cattle short distances in a group. These pastures were then organized into three "management areas"—North, South, and West—based on similarity of terrain and ease of movement from one pasture to another. They began the process of reducing the size of the paddocks with additional fencing until they had established the infrastructure for rotational stocking. The new, smaller paddock size (200 to 400 acres) enabled a reduction in the stocking period and, the Holmeses speculated, increased the likelihood that the cattle would "realize" that frequent rotation takes them to new, high quality forage.

"It's a big behavioral change to get [the cows] to rotate, and rotate as a group," according to Kristen. "That was our biggest hurdle. And that's what's taken the longest." The ranch now has three separate herds grazing for shorter periods in more paddocks with longer rest periods, which they say allows the grass to recover.^{5,6}

The ranch now supports about 700 "gentle" mother cows and "store-bought" bulls at a conservative stocking rate of



Monitoring on the Trigg Ranch. Photo by Sally Trigg.

71 acres per cow unit, a rate that Kristen Holmes has been able to maintain through the current severe drought conditions. She reports that implementation of rotational stocking has resulted in observable and recorded improvements in the condition of the land as measured by new seedlings, which are reducing bare ground and contributing to growth of more grass and better distribution in the ages of perennial herbs and grasses, which will eventually add to ground litter resulting in better utilization of moisture and reduced erosion. The increased "hoof action" and litter have contributed to longer-lasting spring and surface water and more resilient grass that responds more quickly when there is rain. The Holmeses have documented these land health changes through annual comprehensive monitoring of 12 permanent sites scattered over the ranch. The annual monitoring takes Rick, Kristen, and four to 12 Trigg family members 4 to 5 days to complete. The 12 sites, along with seven exclosures, were set up in the fall of 2003 and the family was taught by Howell how to conduct extensive written assessments using a detailed four-part protocol. Annual monitoring is now conducted the third week of September.

Soil Carbon Sequestration Project

In addition to their interest in implementing a more sustainable approach to grazing management and seeing improved conditions on the land, the Trigg family was drawn to the idea of profiting from the generation and sale of carbon credits. Because many of the range management practices they had adopted as part of their transition to HM were in alignment with the CCX Rangeland Offset Protocol,⁷ e.g., rotational stocking and the practice of planning and documenting management activities, the family was able to enroll in the offset program without having to undergo a significant transition. (For more information about what the CCX protocol required, and how it changed over time, see Gosnell et al., this issue.)

"It just happened that all the preparations we had made for this change for how we wanted to run things, happened to coincide pretty much perfectly with the carbon credits thing," said Caitlin.

Before enrolling in the CCX's carbon offset program in 2009, the Trigg family had been approached by several aggregators, but not all seemed legitimate to them. In 2008, Kristen, Caitlin, and Sally attended a meeting organized by the New Mexico State University Cooperative Extension Service and listened to a presentation by Ted Dodge of the National Carbon Offset Coalition (NCOC). Based in Butte, Montana, NCOC was one of two aggregators (along with the North Dakota Farmers Union) that handled the majority of CCX ranch projects. The family felt confident in Dodge's ability to advise them through the process of signing up and, a year later, he helped them enroll almost 50,000 acres under CCX's "degraded" status (derived from the NRCS definition)ⁱ which qualified them for a higher price per credit. They were also able to backdate their credits by enrolling and registering just prior to the January 31, 2009, cutoff date that ended CCX's Early Action Credit category.ⁱⁱ

Because of the large size of the property—50,000 acres—they exceeded the minimum 10,000 metric tons of carbon dioxide equivalent (MtCO₂e)ⁱⁱⁱ required to register credits and were able to form their own pool of credits, giving them more control as to when to sell them. Part of those 50,000 acres included 8,500 acres of New Mexico state trust lands that the Trigg family leases as part of their operation, making them the first ranch in the state to register and sell credits from state-owned land. A few states, New Mexico being one, joined the CCX, allowing holders of state grazing leases to enroll these lands.⁸ In New Mexico, the revenue was shared, with two-thirds going to the leaseholder and one-third to the state.⁹

Sally Trigg estimates that it took approximately seven full days of various people's time (more than most other ranchers in our study reported) to gather, update, and double-check all the required information for the CCX application and to negotiate the terms of their contract with NCOC. The third-party verification process, led by Agri-Waste Technology, Inc, took another 6+ weeks and, according to Sally Trigg, required "quite a bit of additional information." She recalled that

After much discussion among the 18 or so family members present at the 2009 annual "Work Week," the consensus was to sell our credits ASAP even though the CCX price might rise if the Obama administration got a cap-and-trade bill passed. The general feeling was that a dollar in hand is better than a "maybe" 3 dollars in a few years.

Outcomes

Though they began the application process in 2008, when the price of carbon was trading at around \$7 per MtCO₂e ("a pretty hefty incentive which would have netted us almost a million dollars!" notes Sally Trigg), the price had begun to drop precipitously by the time they enrolled the property. In June of 2009, the Trigg family decided by consensus to sell their credits as quickly as possible and Dodge was able to negotiate an "over-the-counter" sale (meaning not through the CCX) to Vitol Inc, an energy company based in Houston, Texas, that buys and sells carbon offsets. In 2009, the Triggs sold their 2003–2009 credits at \$1.20 per MtCO₂e for a gross total of \$150,000. According to Sally Trigg,

We received our first payment in early October for the 2003–2008 credits as soon as the CCX registration process was completed. We received the second payment for the 2009 credits only after Agri-Waste submitted an additional verification report for the 2009 year's credits. The third-party verifier could not submit a 2009 verification report until after October 1, 2009, as per CCX rules.

After various deductions (including CCX registration and sales fees, the verification fee, the aggregator's commission, and the state of New Mexico's cut) they netted close to \$90,000 (60% of the gross), which they have reinvested in the management infrastructure of the ranch, including 15 miles of additional fence and five new drinkers. In addition, 2,000 acres of mesquite were sprayed. These improvements were cost-shared under the EQIP program at rates between 50–80%. Roughly speaking, the Triggs estimate that the carbon credit profits they expended through EQIP (less than \$100,000) resulted in perhaps \$400,000 worth of improvements. The way they see it, the money from the sale of the carbon credits almost "reimbursed" them for what they expended to transition the management system of the ranch.

Sally Trigg, an attorney, was able to negotiate paying the verifier after they had received their funds from the sale of the credits, meaning that there were no up-front costs in enrolling their land in the CCX program. They are extremely pleased with the outcome, all agreeing it was "definitely worthwhile." And though the CCX is no longer in operation (see Gosnell et al., this issue), they are planning to continue managing for carbon sequestration as a potential source of income for the ranch in the future if a viable carbon market materializes.

ⁱNRCS defines a project site as having degraded rangeland according to the characteristics of three indicators: bare ground, soil surface loss or degradation, and annual production. From *Interpreting Indicators of Rangeland Health*, 2005.

ⁱⁱCCX allowed ranchers to enroll acres that were under eligible management as of January 1, 1999, onward regardless of enrollment date and receive "retroactive" carbon credits for that land.

ⁱⁱⁱMtCO₂e is the standard measurement of the amount of CO₂ emissions that are reduced or sequestered from the environment.

Challenges

Although the economics of participating in the carbon market worked well for the Triggs, it was arguably only because they were able to negotiate an over-the-counter sale that netted them a significantly higher price than would a sale through the CCX. Also, and perhaps more importantly, their transition to carbon ranching was already underway when they were approached by an aggregator. As Sally Trigg notes,

... had not Caitlin attended the year-long ranch management course at Texas Christian University and compiled a basic "ranch resource book" (3–4 inches thick) including detailed maps, grazing plans, etc. as part of her course work; or had we not set up in 2003 12 monitoring sites that the Triggs monitor annually; or had the family not spent over 13 years discussing and developing a strategy for an "environmentally, financially and socially sustainable" ranching operation; completing the CCX application and verification process would have been so onerous as to keep us from applying.

Caitlin Holmes adds, "I think for people who are already heading this way, whose management practices are leading them down this path ... it's a no-brainer." But both agree that the price of carbon offsets would have to be quite high in order to make implementing those practices worthwhile without other motivation.

As noted above, there were also a number of challenges associated with transitioning to a new type of grazing system. As managers, they relied heavily on the technical advice and guidance from their HM consultant, Jim Howell, and openly admit that a major change in the management approach on the ranch took much longer and was much more difficult than they had anticipated.^{9,10}

The inclusion of state lands in their project added a layer of legal complexity that was handled by Sally Trigg, an experienced lawyer. Without that assistance, they said they would have been confused and uncertain about signing some of the contracts.

And finally, as was the case with many other ranchers involved in the CCX program, the Triggs found themselves somewhat mystified by the details of enrolling their land. They felt overly dependent on their aggregator for determining what had to be done and they acknowledged that during the process, they were unsure about many of the details related to their enrollment, registration, and sale, e.g., who the verifier was, how many credits had been sold, and when they would be paid. They admitted feeling anxious while waiting for their check, wondering at times whether the whole thing was legitimate or not.

Future Outlook

The Trigg family experience demonstrates the need for support and mentorship during the transition to more

sustainable, carbon-oriented forms of ranching. The success of the Trigg's transition has a lot to do with the assistance and encouragement they got from the HM consultant they hired and their aggregator, and from the legal knowledge and experience of Sally Trigg. Their experience also reinforces the notion, documented in the scientific literature,¹¹ that people learn new things and how to implement them not just from technical experts, but from peers. There has been some discussion among the Trigg's neighbors and other local ranchers of getting those who are practicing HM together to talk about their individual experiences and help each other problem-solve.

In sum, the Trigg family's experience transitioning to HM, rotational stocking, and carbon ranching is instructive for ranchers who are interested in participating in a carbon market, but who are not already managing their land to improve carbon sequestration, and who may need to navigate similar transitions.

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