Creating a Culture of Innovation in Ranching

A study of outreach and cooperation in west-central Colorado.

By C. A. Kennedy and Mark W. Brunson

Conserving working landscapes means creating a community of landowners and managers engaged in a sustainable, productive relationship with the land despite social, economic, and environmental change. Ranchers across the West are reviewing their management options in the face of daunting forces such as drought, rising land prices, and encroaching development. While ranchers and other rangeland managers seek answers, research and Extension personnel look for the best ways to get those answers to the people who need them.

Ranchers in west-central Colorado seek out new ideas for managing rangelands, and many make changes based on these ideas. Since 1996, 3 ranches in the communities of Paonia and Montrose have received the Excellence in Range Management Award from the Colorado Section of the Society for Range Management. Their willingness to innovate could be partially due to exposure to numerous range management ideas through other ranchers and Holistic Management programs, as well as a unique support system of extension and agency personnel who have introduced nontraditional outreach approaches such as the Range Management School for Ranchers.

Area ranchers, Colorado State University (CSU) Extension personnel, and representatives of the Natural Resources Conservation Service, USDA Forest Service, and Bureau of Land Management collaborated to create the Range Management School for Ranchers.[1] Two courses were developed. The introductory course, Range 101, covers plant identification, grass phenology, plant response to grazing, animal nutrition, monitoring, animal behavior, range economics, range improvements, and poisonous plants. The more advanced class, Range 501, goes into more depth, including designing a grazing management plan. This course helps ranchers develop parts of a plan that federal agencies require, such as carrying capacity and monitoring. Each participant receives a notebook that includes material from CSU range faculty, pertinent articles from journals and magazines, NRCS publications, and speakers' handouts. The cost is $15. The first class in December of 1995 had 62 ranchers, federal land managers, private rangeland owners, and environmentalists. The School now has several well-attended classes every year and is a model for similar efforts in other areas.[1,2]

As researchers seeking ways to improve adoption rates for new range management practices, we wanted to know how these apparently successful efforts in Colorado, including the school, influence technology transfer. We explored how ranchers put new information about range management into practice—in other words, how information on range management evolves from an Extension fact sheet or workshop into application and integration into rancher operations. Previous studies have examined range management adoption, rancher characteristics associated with adoption, and barriers and facilitators of the adoption process; however, we know of no studies that specifically address the effects of a ranchers' school on technology transfer.

Ranchers operating in west-central Colorado, including school attendees, were surveyed and interviewed on their adoption of range management practices and their use/non-

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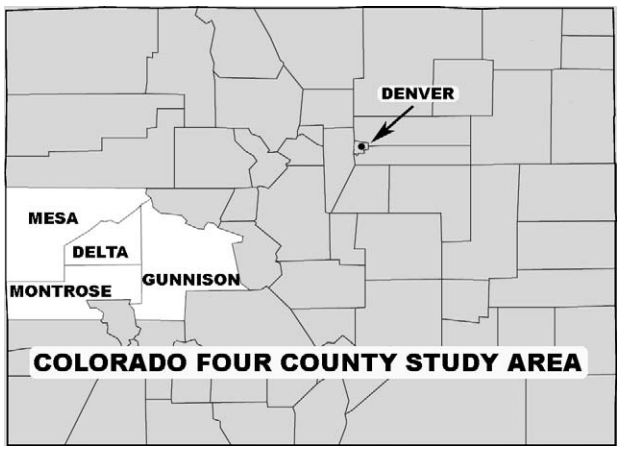

Figure 1. Two-thirds of survey responses came from a four-county region in west-central Colorado.

use of the Range Management School for Ranchers. We mailed a four-page survey to all 647 persons on the mailing list for the CSU Tri-River Extension Office. This list included Forest Service and BLM permittees in Mesa, Delta, Montrose, San Miguel, Ouray, Hinsdale, Saguache, and Gunnison counties, as well as other individuals in the area who were on the mailing list because of past participation in range and livestock Extension programs (Fig. 1). The survey included inquiries into ranchers' range management, their use or nonuse of range management innovations, and sources of information for range management ideas.

In all, 247 filled-out surveys were mailed back for a return rate of 38%. Sixty-one of the respondents did not raise livestock in 2002 or 2003, producing a final sample size of 186 respondents. We summarized data from the surveys and developed themes for exploration in qualitative interviews.

The interview sample included a subset of respondents. The survey asked respondents if they would be willing to be contacted by a graduate student "who would ask more about your experiences as a livestock producer." Eighty-eight respondents indicated yes, and provided their names and contact information. Eighteen respondents were selected from the 88 who agreed to be interviewed, using a stratified sampling strategy based on decisions to attend/not attend the Range Management School for Ranchers and to implement/not implement range management changes in their operations since 1995, and on the types of range management change implemented. This approach allowed us to interview respondents who tried both common practices (eg, adding a water source or relocating fence lines) and less common ones such as range monitoring and alternative animal handling. We were able to contact and interview 16 of the 18 respondents selected.

Each of these 16 ranchers was also asked to identify other ranchers they knew who made changes to their operations. This "snowball sampling" method[3] provided opportunities to interview ranchers who did not respond to the survey or were not on the Extension mailing list, and who had been difficult to access otherwise. Seven ranchers were identified using this method and interviewed, creating a total interview sample of 23 ranchers.

Qualitative interviews specifically aimed to gather information on the process of adapting and implementing range management innovations into individual operations. Qualitative research is increasingly acknowledged as a valuable tool in understanding range management decision making because of its flexibility and attention to context, and its ability to reveal social, historical, political, and economic factors that affect ranch management but that have eluded quantitative studies.[4] Sayre explains that quantitative research requires standardized answers, but qualitative research can be flexible and open-ended, allowing unanticipated factors to emerge. Qualitative methods also allow the researcher to evaluate decision making and decision-making environments on a case-by-case basis. The researcher spends time with individual ranchers and their ranches, gaining knowledge on rancher behavior and their management that cannot be captured using aggregate, quantitative methods.

For this study, interviews were open-ended and conversational, but semistructured using an interview guide. Questions focused on topics exploring how ranchers made changes to their operations, what forces drove them to make changes, and how they learned from their peers and other information sources.

From these surveys and interviews, common themes about range management innovations, and the role of the Range Management School and agency support in these innovations, emerged. These themes are presented and discussed here.

Who Adopts New Practices?

We found that although all ranchers experience conditions such as drought and rural development, some perceive those conditions as incentives to change, whereas others perceive them as obstacles.

A key influence on these perceptions is a rancher's personal and management goals. Different goals result in different perceptions of consequences. If a practice is seen as being likely to detract from a lifestyle goal such as "time with family," then the practice loses its appeal. One interviewee switched to management-intensive grazing on his allotment and saw benefits of better herd health and increased forage, but also found he enjoyed time spent riding the allotment with fellow permittees; for this rancher, management intensive grazing met not only ranch goals but also a lifestyle goal. Another permittee saw the same benefits, but said it took valuable time away from other important parts of his life, such as family. He had recently sold his permit.

Interviewees often held full-time outside jobs, as did their spouses and other family members. This meant their available time and labor were restricted by off-ranch commitments. This fits with previous research suggesting off-ranch commitments inhibit innovation. For example, Texas

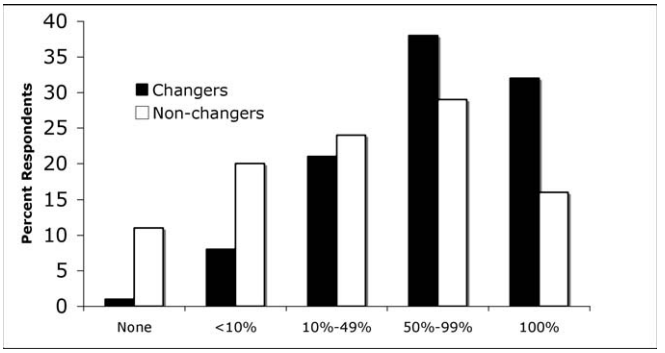

Figure 2. Proportion of income earned from agriculture among respondents who changed and did not change management practices.

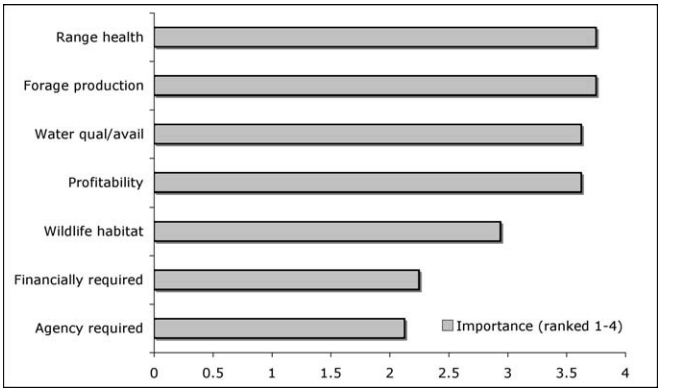

Figure 3. Mean importance of motivations for making management changes (scored 1–4 where 1 = not at all important, 4 = very important).

ranchers who invested in weed and brush control had higher proportions of family income from livestock production and less off-ranch income,[5] and innovative ranchers interviewed in Utah noted they were able to spend more time on innovations because they were full-time ranchers who didn't have to work off the ranch.[6]

Among ranchers surveyed in our study, 70% of those who had made changes in their range management earned more than half of their income from agriculture, whereas only 44% of nonchangers made more than half of their income from agriculture (Fig. 2).

Ranch Motivations and Goals

Survey respondents making range management changes ranked rangeland health, forage production, profitability, and water quality and availability as top motivations behind their decisions; financial reasons or BLM or Forest Service requirements were least important (Fig. 3). Among ranchers interviewed, ranch goals centered on increasing efficiency, increasing profits, and maintaining a ranching lifestyle, and indicators such as improved animal performance or better forage utilization were important factors in decision making.

Having clearly defined goals encouraged change. Many interviewees participated in the Holistic Management program, which emphasizes the importance of making decisions around a holistic goal, and monitoring and testing decisions toward that holistic goal. In practicing Holistic Management, ranchers work to recognize the consequences of a practice and how those consequences relate back to ranch goals.[7]

One rancher explained how after attending Holistic Management classes and learning Holistic Management principles, he worked to build goals for his ranch.

The real important part was going back to the family and getting the basic goal. Where I thought I was going to come home and build fences, I came home and got my son and daughter and wife to talk about what was important in their life. I mean that seems like a long way from building fences and growing grass, but that's really the important part, because you can make all of those mechanical adjustments, but if you don't get the deep down stuff of where you're headed in life with the rest of your family, it isn't so great. And I have seen that split families up, where when they get down to that deep what's important to them they realize they're both going different directions. It's not always good. But in our case it was good.

Seeing is Believing

It was important for ranchers to be able to see that a change was meeting or not meeting ranch goals. Without that feedback, ranchers were unsure of the benefits and drawbacks of newly implemented practices, other than their initial cost in time, labor, and money.

One rancher explained a newly implemented rotation on his allotment using electric fence. He could see it was making some difference because a lot of cattle trails were gone, but when asked if he thought it had made a difference in recent tougher years, he replied, "It's hard to say but, I can't really see that it's a night and day difference. I may not be giving it enough credit I don't know."

One important source of feedback comes from frequent interactions with other ranchers using the same practice, allowing ranchers to gain from multiple sets of "trial and error" and see various indicators of success or failure to compare to their own situation. One rancher described how he learned to use electrical fencing through his own and other ranchers' trial and error.

That was probably the thing that helped us the most, was that three of us were trying to use it at home and talking back and forth about it. Plenty of failures. I don't have any of the first electric fence posts that I bought. None of them were right. Some of the chargers, the tape, the wire, all that stuff changed how we did it, what we expected out of it. So trial and error and also neighbors' trial and error.

Other opportunities for feedback came from Holistic Management programs and the Range Management School for Ranchers. These programs provided a foundation in range management that ranchers could use to evaluate the quality of their range, and allowed them to see trends of improvement or degradation. One rancher explained, "Those schools made it a lot easier to see both why you were doing it and what results you might see and things not to do…"

The Range Management School for Ranchers incorporates frequent evidence of positive outcomes of range man-

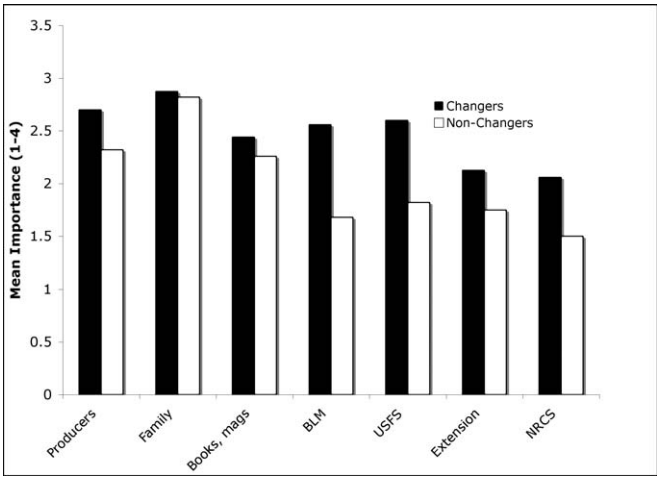

Figure 4. Mean importance of information sources used when making range management decisions, comparing those who did and did not make changes in management.

agement into the curriculum, thus enticing ranchers to try an idea or to reinforce an idea that they are already trying by illustrating the benefits they can realize.

Change and Outreach

Fellow ranchers and family members are not only important sources of feedback *after* a change is made, but also important sources of information *leading to* a change. Our survey found that family members were the most-used information source for all ranchers; however, one thing that distinguished changers from non-changers was the number of sources of information used. Ranchers making management changes were more likely to consult other ranchers, as well as experts from the NRCS, Extension, and land management agencies (Fig. 4).

So what role does the Range Management School for Ranchers play? Among survey respondents, 92% of people who had attended the school had made changes in their range management practices since 1995, whereas 62% of nonattendees had changed practices since 1995. Thus school attendance seems to positively influence ranchers' potential for change, but is not a prerequisite for change.

Among the people who attended the school, almost all made some kind of change since 1995, but nearly half (46%) of survey respondents reported that they did not change their range management practices *as a result of* attending the school. Even so, some made comments such as, "But I understand why we needed to do what we were doing," or "We were doing most of what they talked about," indicating that for these ranchers the school provided reinforcement of ideas that they were already trying.

Among the 54% of school attendees whose practices did change as a result of attending the school, several commented that after attending the school, they had the information they needed to make decisions on range management changes they were already considering. One rancher commented, "The class helped us decide." Another rancher said that changes made were "not necessarily because of the school, but the information given was a good source to help us with decisions."

Thus the school is both facilitator and reinforcer of range management change, but is less important as an instigator of change among ranchers who otherwise would be unlikely to make changes on their own. Results suggest that, for many ranchers, the initiation of an idea for change comes from information sources important to them, such as other ranchers, family members, or the BLM or Forest Service. The school then acts as a road map showing how to get there, allowing ranchers to learn how to fit the practice into their own lives. The school seems to shift an idea from an abstract suggestion by a range conservationist to a "practical and personal" piece of advice. As best-selling author Malcolm Gladwell in his book, *The Tipping Point,* pointed out, once an idea becomes "practical and personal" it becomes "memorable."

The school provides a venue to learn the specific characteristics of the innovation, giving ranchers necessary information to decide whether it will or will not work in their situation. Suggested improvements to the school, such as more practical instruction from other ranchers and practice with on-the-ground application, indicate a desire for increased opportunities to answer the question, "What will its advantages and disadvantages be in my own situation?"

According to Everett Rogers,[8] one of the world's foremost experts on innovation in multiple fields, this is a common question when forming an attitude about an innovation, because individuals are looking to decide whether to implement changes themselves. More opportunities for informed decisions can mean more implementation, as the comparison of attendee versus nonattendee rate of adoption suggests.

Interviews showed that the Range Management School also created a common knowledge base among permittees and BLM and Forest Service personnel. The school is attended and/or taught by agency personnel and permittees alike. Both permittees and agency range personnel can leave the school with the same primary range management concepts in mind.

A common knowledge base seemed to help permittees understand the reasoning behind suggestions or requirements made by the Forest Service or BLM. Also, range management knowledge lets permittees incorporate their own ideas into allotment plans and make suggestions in the language that agency personnel understand. Dave Bradford, range conservationist with the US Forest Service in Paonia, explained that he will accept permittees' changes to grazing plans, but permittees must justify these changes with range science. As one rancher put it,

(Range conservationists) have given us a lot of latitude in how we do things…I think it makes an awful lot of difference, because you feel like they're actively involved in the cooperation of it rather than setting mandates…and when you're managing livestock you know, everything is subject to different scenarios all the time and a lot of people don't really understand that… The reward's been

there for being proactive. They've given us a lot of leeway and yet still, they watch us closely, but it's been worth them watching us.

How Public Land Managers Help

Relationships with public land agencies play a large role in west central Colorado ranchers' aptitude for change. Flexible and cooperative relationships encouraged substantive, sustaining change. Conversely, those with doubts about the benefits of substantive change tended to feel constrained in their relationships with public lands agencies.

I think sometimes they don't want to listen to um, to experience. They have all these ideas they've learned out of a textbook somewhere and they feel like they have the answer, and they don't—It's like they have set answers for every place, and every place is different and every allotment's different, and sometimes it's pretty tough, because you know you have people that have run cattle for 50 years on an allotment and they've seen it all and they've done it you know, but it's kind of a continual fight…

Although Forest Service/ BLM requirements were not seen as important reasons to change among survey respondents (Fig. 3), agency suggestions or requirements did play a role in most interviewees' range management. Agency suggestions or requirements often lead to initial corrective changes. When coupled with recognizable, positive feedback these corrective changes lead to more substantive and larger-scale changes for several interviewees.

Toward a Culture of Innovation

We originally suspected that the Range Management School for Ranchers was an important reason why west-central Colorado ranchers adopt range management innovations. Our results suggest that the school plays a key role, but not quite in the way we thought. The school makes change more feasible, but it is just one part of a "culture of innovation" that exists in the area. The supportive atmosphere was also cultivated by Holistic Management training and cooperative relationships among permittees and public land managers. These cooperative relationships might be due in part to permittees and agency personnel sharing a common knowledge base via the school and/or Holistic Management training. With a common knowledge base comes a common language that helps build strong working relationships among permittees and public land managers. Thanks to these multiple facilitators of change, area ranchers who are interested in innovation have a solid network of neighbors, whose own change experiences provide valuable feedback for improved success.

The important question therefore becomes: How can range managers and education providers nurture a culture of innovation in their own areas? First off, it's important to understand the reasons why changes get made. We found that ranchers' primary motivations for change are values tied to the land base, such as forage production, range health, and water quality, as well as a desire to improve profitability. This suggests that when designing range management outreach, it's important to provide frequent evidence of positive outcomes related to land health and profitability—especially because frequent feedback is needed if ranchers are to stick with changes that have short-term costs but promise long-term benefits.

When designing outreach efforts, framing messages so that they align with common ranch goals could encourage ranchers to initiate change in their range management. Emphasizing links between range management alternatives and common goals such as increased time efficiency, profit, and maintaining a ranching lifestyle provides ranchers the necessary information for decisions to incorporate those alternatives into their own operations.

Many outreach tools, such as Extension bulletins, emphasize range conservation as the primary goal and publish specific information geared to achieve that goal. Among ranchers interviewed, conservation is a chief concern, but its feedback (negative or positive) is often years in the making. Consequences to profit, time efficiency, and lifestyle are readily felt. Outreach materials that incorporate these common ranch goals and link them to conservation are more practical and personal to many ranchers, and therefore might be more readily applied.

It's also significant that we found Forest Service and BLM personnel to be powerful proponents of range management change on both public and private lands. Working relationships between permittees and personnel encouraged change, whereas adversarial relationships seemed to discourage substantive change on rangelands. In an era when political dialogue focuses on the negative aspects of rancher/agency relationships, it's important to be able to see examples of how things can work in a nonadversarial atmosphere. The agency/ Extension/rancher partnership that led to the Range Management School for Ranchers might be unique among western working landscapes, but we strongly urge investigations of how "technology transfer" can be enhanced by nurturing such relationships among agency personnel and ranchers in other regions.

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