# RANCHER PERSPECTIVES ON SOCIAL AND ECOLOGICAL CHANGE IN WYOMING'S WIND RIVER BASIN

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**B-1408**
December 2025

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All photos by Callie Surber

*Issued in furtherance of extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Mandy Marney, Director, University of Wyoming Extension, College of Agriculture, Life Sciences and Natural Resources, University of Wyoming Extension, University of Wyoming, Laramie, Wyoming 82071.*

## INTRODUCTION

Ranches and rangelands are important working landscapes that can benefit biodiversity conservation, ecological health, food security, and rural economies (Brunson & Huntsinger, 2008; Haggerty et al., 2023; Holechek et al., 2020; Kremen & Merenlender, 2018; Saliman & Petersen-Rockney, 2022). In semi-arid environments like Wyoming, working with uncertain precipitation systems and limited water resources has fostered innovative livestock management and unique intergenerational knowledge (Saliman & Petersen-Rockney, 2022). Despite these strengths, challenging environmental conditions such as frequent drought, changing water availability, and increasing presence of invasive weeds could impact the livestock industry. Ranchers also interface with changing social structures such as land-use policy, recreational pressure, and economic conditions.

To better understand how ranchers are perceiving and reacting to changes in interconnected environmental and human systems, this qualitative case study explores the experiences of ranchers in Wyoming's Upper Wind River Basin. Study goals were to understand how Wyoming ranchers experience and perceive environmental and social changes and how those changes may impact their operation, management decisions, and ultimately, their livelihoods. By better understanding these dynamics, I hope to inform management agencies, policymakers, and future research that can address emerging concerns.

## DEFINITIONS

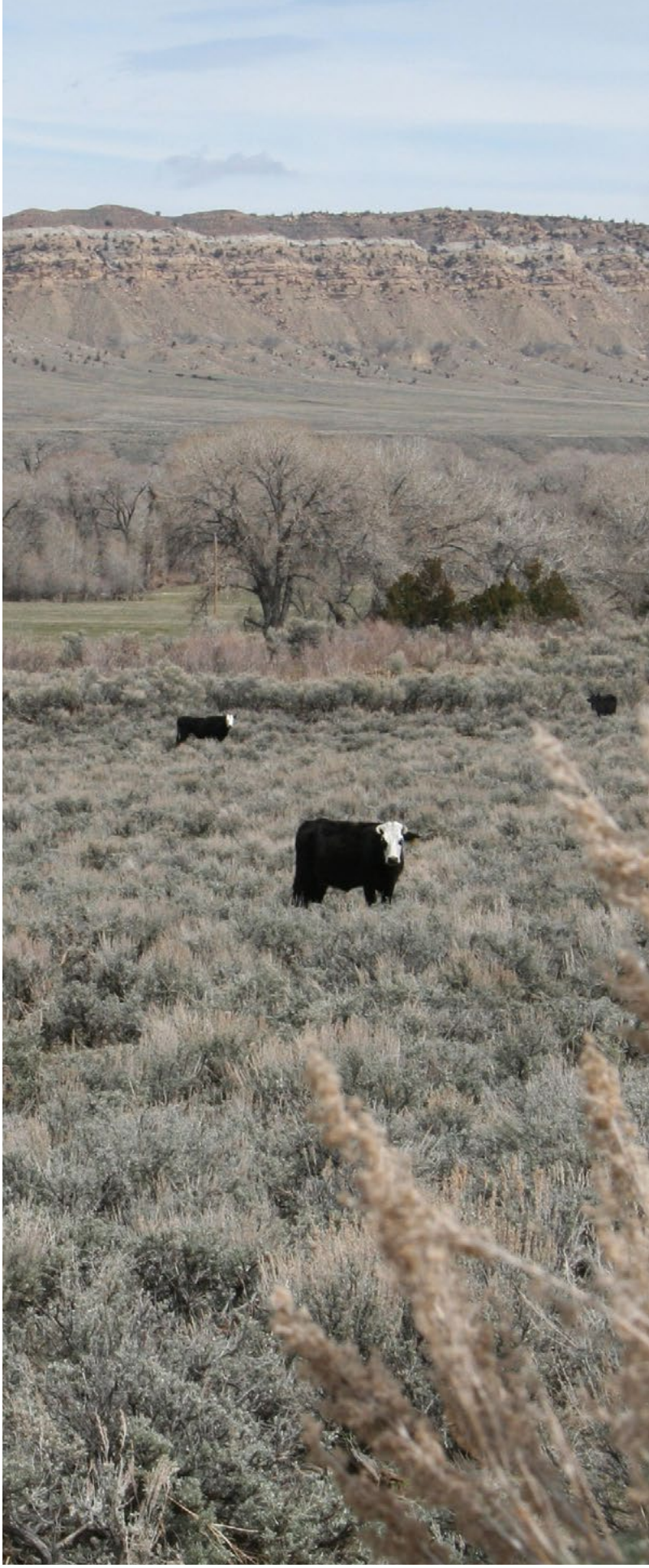
"Environmental" factors are defined as biophysical and earth-based processes, including wildlife, habitat, vegetation, water, and climate. Examples: rangeland health, wildlife activity, weather, soil moisture.

"Social" factors are defined as human dimensions related to economics, culture, policy, and management. Examples: grazing policy, commodity beef prices, community values, wildlife management strategies.

The term "ranchers" is used to describe agricultural producers who run livestock in their operation, including those with mixed operations that produce hay and other crops in addition to livestock.

## PROCESS

During summer 2024, I conducted interviews with 38 ranchers in the Upper Wind River Basin. Six interview participants were enrolled tribal members. Interviews took place across Fremont County at various locations, including a UW Extension office,



local diners, ranch pastures, and ranchers' homes. Interviews were recorded and transcribed (excluding one interview, where notes were taken instead), then analyzed for themes and patterns using MAXQDA software (e.g., "increasing property values" or "irrigation infrastructure change"), which resulted in a final narrative write-up.

This study is not intended to create statistically generalizable results, but rather to explore the breadth of views in the study region, creating a nuanced understanding of how ranchers are perceiving and responding to social and environmental changes.

## SUMMARY

Below, the research findings are summarized in narrative form. Headings separate different groups of related themes. Direct quotes from interviews are utilized throughout. Links to resources addressing some of the concerns discussed in interviews can be found at the end of the document. In the interest of a succinct summary, not every theme is covered below.

## A PACKAGE DEAL: RANCH OWNERSHIP TRENDS, PROPERTY VALUES, HABITAT LOSS, AND BARRIERS TO YOUNG OPERATORS

More than half of the ranchers interviewed, whose livelihoods rely on ranch income, brought up concerns about wealthy "outsiders" buying up local agricultural land. Sometimes called "amenity ranchers," these typically absentee landowners purchase ranchlands for recreation, scenic value, privacy, and wildlife (Yung et al., 2015). In this study, the amenity ranch trend was especially concerning to ranchers as it drives up property values, impacting their ability to expand their operations, increasing property taxes, decreasing local agricultural product outputs, and potentially leading to land fragmentation. High land values limit young operators from entering the livelihood, unless they inherit property or participate in a multi-generational operation. These impacts are seen as further contributing to the trend of an aging agricultural population.

Land and habitat fragmentation was an especially important concern. One rancher summarized this by stating, "It's large public lands in conjunction with the large holdings of private lands that really make Wyoming...special with what it does for our wildlife. And I think it takes the two working together to keep that happening. And I think that, especially since COVID... it's falling apart. It's falling like dominoes." Ranchers viewed the influx of amenity buyers and growing rural populations as a driver of development and fragmentation of formerly large, intact ranchlands.

Despite unprecedented property values that would allow many ranchers to sell for multiple millions of dollars, most ranchers interviewed expressed no interest in selling. As one young rancher put it, "I don't know how to explain it. You don't make money, you're making a life."

Conservation easements are one adaptive strategy that some ranchers are using to combat inflated property taxes and land fragmentation. These are voluntary legal agreements between landowners and private or government agencies that acquire and hold interests in the property to restrict land use, usually permanently; in many cases, landowners are paid for easements and/or receive a tax reduction (Rissman et al., 2007). One rancher who chose to implement a conservation easement was primarily motivated by his deep connection to the land, stating, "It stays with the property after I die. It stays with the property forever. To me, that was awesome, because I couldn't imagine seeing it go." Despite the benefits of conservation easements, many ranchers talked about the barriers to implementing easements, such as taking away choice from future generations, limiting ability to adapt with changing times, and challenges of working with easement-holding agencies.

## ECONOMIC DRIVERS: INFLATION, DIVERSIFYING INCOME, AND THE BOTTOM LINE

In many interviews, economic viability was brought up as the first consideration in ranch management decisions. One rancher summarized this by saying, "You know, a lot of times I wouldn't say that a lot of our future plans are necessarily discussed based on environmental factors. A lot more of it is financial factors. Just the cost of ranching compared to what you're getting out of it." Ranchers have seen unprecedented inflation of ranch inputs (goods required to run a ranch such as fencing, hay and feed, and equipment) since 2020. This trend caused some ranchers to worry about being "priced out" of agriculture, reaching a tipping point where production costs outweigh the commodity value and ranching is no longer economically feasible for the average Wyoming producer.

To combat inflation at the ranch level, ranchers reported using adaptive strategies such as increasing efficiency with inputs (fertilizer, water, etc.), working external jobs, and diversifying income. While these responses are not necessarily new to ranchers, there was greater urgency due to the extreme inflation seen in the last five years. A few of the noted diversification strategies included selling wool, raising certified bulls, running feedlots, leasing out housing, marketing beef directly to consumers, and selling vegetables. There was also awareness of the growing outdoor recreation and tourism economy, and potential ways to leverage this opportunity on the ranch by incorporating services and amenities for tourists such as cabin rentals.

## CLIMATE, WEATHER, AND ENVIRONMENTAL CONDITIONS

More than half of the ranchers interviewed brought up climate change, articulating a wide range of perspectives. Some discussed beliefs that climate trends are part of a natural cycle, some talked about how humans are contributing to changes, and some believed that climate change is overinflated or untrue. Many ranchers talked about constant change, such as one rancher who stated, "Ag and climate is a completely evolving monster. Like, it changes every day…It's just constant change and trying to keep up with that change." Both ranchers who explicitly talked about climate change, as well as some who did not, noted hotter and longer summers as well as increased storm severity occurring in the region.

Variability of year-to-year conditions (i.e., precipitation amounts and forage availability) fosters short-term ranch decision-making and may decrease the utility of long-term climate forecasts for ranch planning. As one rancher summarized, "You're in business with Mother Nature. I mean, there's no way around it. You're partners. And so you kind of got to do the best with what you have and try and make decisions accordingly. I think that there are a lot of variables in play that make it really hard to look at long-term climate forecasts." Other ranchers made similar observations, noting that integrating longer-term climate forecasts is challenging and that they focus on adapting season to season.

Adaptations to changes in the environment were diverse. One couple talked about shifting their calving season due to changes in weather and temperature in the spring. Another rancher discussed adding yearlings to their cow-calf operation to better match forage availability. Other adaptations included installing solar-powered wells in grazing allotments, making changes to livestock breed and type, maintaining conservative stocking rates, destocking herds during dry years, and changing grazing rotations.

Many ranchers shared a robust sense of environmental stewardship, discussing how their management strategies focus on rangeland health and sustainability. Examples included implementing rotational grazing, utilizing low stocking rates on grazing allotments, and participating in voluntary range monitoring. As one couple put it, "…we're the original environmentalist[s]. And we've always taken care of our land, because it takes care of us."

## LAND MANAGEMENT AGENCY TIMELINES AND INFLEXIBLE POLICY

On public lands, land management agencies that issue public grazing permits largely determine grazing regulations as mandated by federal multi-use policy. In the Wind River study region, most ranchers rely on grazing permits to utilize public or tribal lands. For this reason, agency policies are integral to the success of ranching operations and were a major theme in almost every interview.

Ranchers frequently shared frustration about multi-year waiting times for approval to carry out changes on federal and tribal permit grounds. Projects such as solar well installations, fencing changes, and changing grazing timing took years to be approved.

Ranchers discussed how these limitations prevented them from making timely management changes to match current forage conditions and availability.

Interviewees expressed a desire for more flexibility around grazing regulations based on the conditions of allotments. As one rancher stated, "We're going off our…40-year-old management plans in an ever-changing climate, right? We need to be resilient and adapt to it." This rancher went on to state, "We can't effect policy change fast enough to match the pace of the environmental and social changes."

## WATER

In the Wind River Basin, the annual water cycle is dominated by snow accumulated during the winter. Resulting runoff during the spring and summer seasons determines water availability for ecosystems, agriculture, and communities (Hostetler et al., 2021). This runoff is critical for irrigation supply, which most ranchers in the region rely on to grow hay.

Ranchers talked about cycles of "good water years" and "bad water years," with drought an especially frequent concern. One rancher noted, "It does seem like we're short on water more often than we used to be. I guess my biggest concern is our glaciers here at the headwaters. I see pictures of how big they used to be, and they seem to be considerably smaller now."

Interviews revealed that ranchers are also worried about competing water uses, especially increasing municipal water demand due to growing cities downstream. While often grateful to be operating on the east side of the Continental Divide (where water ultimately runs east into areas with fewer water shortage concerns), ranchers were still concerned about possible statewide implications of overallocation and ongoing changes in the Colorado River Basin. Other competing water uses included industrial allocations and instream flow regulations. Competition between local water users was also mentioned frequently and multiple ranchers cited the phrase, "whiskey is for drinking, water is for fighting."

Ranchers discussed a few factors that they felt insulate them from some of their concerns around water availability. These included proximity to headwaters, senior water rights, operating on the east side of the Continental Divide, and a perception of water rights being bound to land (note: Wyoming water law generally ties water rights to a property for a specific use; however, exceptions and changes are possible by working with the State Engineer's Office).

Adaptations to drought were commonly discussed. Strategies include destocking herds to better match forage availability, buying extra feed to supplement when hay growth is limited, and routinely running livestock numbers below the permitted stocking rate on grazing allotments during drought and non-drought years. Rotational grazing was a common practice and its benefit during drought years was emphasized.

Upgrades to more efficient irrigation infrastructure constitute an important adaptation option for ranchers. About half of the ranchers interviewed utilize at least one center pivot or sprinkler, typically more. Over half of the ranchers discussed previously changing one or more field from flood irrigation to pivots, increasing the number of pivots on their operation, or hoping to do so in the future. Motivations to change infrastructure included greater efficiency with water, greater crop yields, accessibility for older operators, less labor and fewer ranch hands required, ranch succession implications, and especially time savings. While sprinkler systems are extremely expensive, cost-share programs with the Natural Resources Conservation Service enabled many ranchers to make the change.

## INVASIVE WEEDS

Non-native weeds (especially cheatgrass) were widely cited as one of the most pressing concerns related to environmental change. Multiple ranchers noted the rapid pace with which weeds can take over and the resulting shift in forage that can result from invasives.

Weed management strategies included applying pesticides, strategically timing rotational grazing, haying at earlier times, and ensuring that vehicles coming from certain areas are properly pressure-washed before exposure to a different range or pasture. A few ranchers made more drastic changes by choosing to exit cattle production and running sheep instead, as they are more resilient to ingesting specific types of invasive weeds.

## WILDLIFE MANAGEMENT

Ranchers who operate closer to the Wind River Range and those with grazing allotments on the Shoshone National Forest discussed significant wolf depredation issues. Responses included exiting the livestock side of agriculture, utilizing sheep-protecting dogs, and working with the Wyoming Game and Fish Department to track wolf packs and increase protection when packs are nearby.

For ranchers in the lower portions of the basin, wild or feral horse overabundance and resulting impacts are a major challenge. Horses cause issues with infrastructure damage and habitat degradation through trampling and overgrazing. While cattle grazing is regulated, ranchers shared that "the horses are there 365 days a year, cattle are only there, sometimes, you know, 60 to 90 days." Due to the Wild and Free-Roaming Horses and Burros Act, ranchers expressed that responsibility to manage these horses lies with government agencies.

## RECREATION

Almost half of the ranchers interviewed talked about an increase in recreation in the area, leading to both positive and negative impacts. Some have experienced damage to infrastructure such as solar panels, gates, and fences. On the other hand, one rancher noted that increased interest in recreation has led to more opportunities to partner with nonprofit groups and fund on-ranch conservation projects.

## COMMUNITY CONNECTION TO AGRICULTURE

Ranchers expressed concern about the growing disconnect between average consumers and food systems. They felt that lack of agricultural knowledge leads to mischaracterization of grazing and agriculture, with the public viewing ranching practices negatively. These concerns were often followed by calls for more public education and making "friends of agriculture." A few ranchers talked about ways they have increased efforts to engage with the community, providing education and ranching experience.

## CONCLUSIONS

Overall, ranchers talked about focusing on near-term changes and conditions, primarily season-to-season adaptation. This approach fosters effective management shifts to match current conditions (e.g., reducing herd size to match forage availability during a drought year). However, it may be challenging to engage in longer multi-year planning.

Trends emerged in how ranchers perceived their personal agency in responding to different challenges. Agency is defined as the ability to take action and make choices that result in desirable outcomes (Greene et al., 2022). Ranchers generally felt a higher sense of agency in dealing with environmental challenges and a lower sense of agency in dealing with social challenges like inflation and policy. This is exemplified by one rancher stating, "Environmental concerns are there, but I think they're something we can work through. What my bigger concerns are is with policy." Ranchers generally felt that they had an ability to overcome environmental changes by making management decisions at the ranch scale according to changing conditions. Conversely, the system-wide scale of social challenges led to feelings of low agency. For example, ranchers have little power to influence the market price they receive for beef and livestock (Sayre, 2024), but these prices significantly affect their bottom line and ability to continue ranching. These trends of greater concern around social changes point to the need for robust agricultural advocacy and effective policy to support the sustainability of livestock production.

In terms of adaptation, ranchers are engaging in many types of management changes to create more resilient operations. Across almost every interview, ranchers discussed ways that

they change their operations in response to environmental conditions (e.g., changing grazing rotation plans). While many adaptive responses to both environmental and social changes are not "new" (e.g., diversifying income, upgrading irrigation infrastructure), they may become more vital as it becomes more difficult to maintain the ranching livelihood.

Based on the concerns found in this study, it is increasingly important for resources to be focused on federal, state, and tribal rangeland management. Increasing personnel and focusing on staff retention can expand the capacity of local land managers and enable them to work alongside ranchers to facilitate effective grazing under fluctuating year-to-year forage conditions, for instance. This is especially important due to the reported multi-year wait times for approval to make changes on grazing allotments. As conditions change, timely management and policy changes should occur. By building capacity of rangeland managers, grazing regulations are more likely to keep pace with rapid changes and allow ranchers to adapt effectively year to year, in turn promoting greater conservation outcomes. It is important to note that federal policy can also act as a restriction on decision-making power of local rangeland managers.

Interviews reinforced that ranching facilitates purposeful land stewardship and is a critical conservation tool. Ranchers strive to improve their operations year after year, engaging in lifelong learning to promote better outcomes for the ranch and the ecosystem. In almost every interaction, ranchers discussed their reciprocal relationship with and deep connection to rangelands. One rancher summarized this in their statement, "I would stress the significance of understanding that agriculture isn't perfect, but it's necessary. And on most fronts, I would say all the [ranchers] that we know try really hard to leave things better than they found them. To improve the ground, improve the soils, the grass, the water management, and then ultimately that trickles into the plant and animal life and better cattle. And I think that's something that reassures me a lot. I like to see things improve. Makes me feel like we're headed in the right direction, even if it's not perfect."

Ultimately, successful adaptation can enable ranchers to continue stewarding the open spaces that maintain the character of Wyoming—preventing major habitat fragmentation, allowing wildlife access to migration routes, supporting rural communities, and continuing cultural legacies.

## ACKNOWLEDGMENTS

I would like to thank each rancher who took the time out of their busy season to sit down with me for an interview. It was a privilege to get a glimpse into your world. I admire the dedication and care that each of you put into your operation and livelihood.

This study was made possible through grant funding for the WyACT project from the National Science Foundation and EPSCoR.

## RESOURCES

A few key resources to address challenges that ranchers discussed in interviews have been compiled below. Please contact your local UW Extension office if you would like assistance finding additional resources.

### Conservation Easements

UW Extension Bulletin B-1317, *Wyoming Conservation Easements: Lands, Services, and Economic Benefits* – Information and background about conservation easements and their purpose.

Conservation Easements: Conserving working ag lands for future generations – A Wyoming Stock Growers Land Trust resource about conservation easement policies, typical timelines, and landowner payments and expectations.

There are many organizations in Wyoming to partner with on conservation easements. A few include the following:

- The Nature Conservancy
- Wyoming Stock Growers Land Trust
- Jackson Hole Land Trust
- Sheridan Community Land Trust
- Rocky Mountain Elk Foundation

### Climate and Weather Data Records

Climate Quick Reference Guide – These one-page guides, available for each county in the U.S., provide a quick overview of key historic and projected climate factors that impact agricultural production. The guides also list the top causes of crop loss for the past 30 years.

Historical Climate Tracker – This tool shows data for 30 different variables, including wind speed, freeze dates, growing degree days, and drought severity, over the last 30 years in your area.

### Weather and Drought Forecasting

WY Conditions & Outlooks Monthly Webinars – Get live monthly updates on current conditions and forecasts for precipitation, temperatures, drought, floods, and everything in between across Wyoming.

U.S. Seasonal Drought Outlook – These monthly maps from the National Weather Service use forecasts to predict whether drought will persist, develop, or improve over the next three months.

### Drought Planning

UW Extension Bulletin B-1325, *Navigating Drought in Wyoming* – A comprehensive guide to drought planning with additional resources for producers.

National Drought Mitigation Center – Offers many online tools for monitoring drought conditions, planning for drought, and managing the impacts of drought.

### Drought Monitoring

U.S. Drought Monitor – NOAA, the National Drought Mitigation Center, and the USDA produce a weekly map of nationwide drought conditions and designations that are used for things like FSA Program triggers.

Intermountain West Dashboard – Provides situational awareness of weather, drought, and water resources for Wyoming and neighboring states through live data sources such as snowpack, streamflow, soil moisture, and more.

### Rangeland Resources

Grass-Cast – Uses almost 40 years of historical data on weather and vegetation growth—combined with seasonal precipitation forecasts—to predict if rangelands in individual 6-mile grid cells are likely to produce above-normal, near-normal, or below-normal amounts of vegetation.

IMAGINE – Institute for Managing Annual Grasses Invading Natural Ecosystems – A University of Wyoming program, IMAGINE provides science-driven solutions and treatments for invasive grasses.

### Water Management and Conditions

USGS Wyoming Water Conditions – This map shows stream gauges around the state, with options to view recent data on river or stream flow, temperature, and percent of normal based on historic data.

State Engineer's Office "SEO Flow" – Displays the most up-to-date data on flows for rivers, streams, and ditches across Wyoming, with the ability to access historic data.

### Wyoming Agriculture and Local Food Advocacy:

Wyoming Food Coalition

Wyoming Stock Growers Association

Wyoming Cattlewomen

## REFERENCES


Brunson, M. W., & Huntsinger, L. (2008). Ranching as a Conservation Strategy: Can Old Ranchers Save The New West? *Rangeland Ecology & Management*, *61*(2), 137–147. https://doi.org/10.2111/07-063.1

Greene, C., Wilmer, H., Ferguson, D. B., Crimmins, M. A., & McClaran, M. P. (2022). Using scale and human agency to frame ranchers' discussions about socio-ecological change and resilience. *Journal of Rural Studies*, *96*, 217–226. https://doi.org/10.1016/j.jrurstud.2022.11.001

Haggerty, J. H., Epstein, K., Bennett, D. E., Milton, B., Nowlin, L., & Martin, B. (2023). Wildlife, Rural Communities, and the Rangeland Livelihoods They Share: Opportunities in a Diverse Economies Approach. In L. B. McNew, D. K. Dahlgren, & J. L. Beck (Eds.), *Rangeland Wildlife Ecology and Conservation* (pp. 933–967). Springer International Publishing. https://doi.org/10.1007/978-3-031-34037-6_27

Hostetler, S., Whitlock, C., Shuman, B., Liefert, D., Drimal, C. W., & Bischke, S. (2021). *Greater Yellowstone Climate Assessment: Past, Present, and Future Climate Change in Greater Yellowstone Watersheds*. Greater Yellowstone Coalition. https://gyclimate.org/

Kremen, C., & Merenlender, A. M. (2018). Landscapes that work for biodiversity and people. *Science*, *362*(6412), eaau6020. https://doi.org/10.1126/science.aau6020

Rissman, A. R., Lozier, L., Comendant, T., Kareiva, P., Kiesecker, J. M., Shaw, M. R., & Merenlender, A. M. (2007). Conservation Easements: Biodiversity Protection and Private Use. *Conservation Biology*, *21*(3), 709–718. https://doi.org/10.1111/j.1523-1739.2007.00660.x

Saliman, A., & Petersen-Rockney, M. (2022). Rancher Experiences and Perceptions of Climate Change in the Western United States. *Rangeland Ecology & Management*, *84*, 75–85. https://doi.org/10.1016/j.rama.2022.06.001

Sayre, N. F. (2024). Corn and the range: Rethinking ranching, agriculture and the feedlot. *The Journal of Peasant Studies*, *51*(5), 1208–1229. https://doi.org/10.1080/03066150.2023.2284973

Yung, L., Phear, N., DuPont, A., Montag, J., & Murphy, D. (2015). Drought Adaptation and Climate Change Beliefs among Working Ranchers in Montana. *Weather, Climate, and Society*, *7*(4), 281–293. https://doi.org/10.1175/WCAS-D-14-00039.1

*Issued in furtherance of extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Mandy Marney, Director, University of Wyoming Extension, College of Agriculture, Life Sciences and Natural Resources, University of Wyoming Extension, University of Wyoming, Laramie, Wyoming 82071.*



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**B-1408**
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