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Cowboying for coexistence? Range riding in the New West

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As wolf and grizzly bear populations recover across the American West, livestock producers face renewed challenges of coexistence, prompting increased interest in nonlethal conflict mitigation strategies. One such tool – range riding – uses human presence to prevent depredation and monitor livestock. While range riding is gaining traction among conservation practitioners and producers alike, empirical research on its implementation, effectiveness, and sustainability remains limited. This study examines range riding in the context of the “New West,” focusing on three long-standing programs in western Montana. Through semi-structured interviews with range riders and program coordinators (n= 7) supplemented by document analysis and broader research within the region, we explore how range riding is defined and practiced, its perceived benefits and challenges, and the labor and funding structures that support it. We find that range riding is understood as a flexible and context-specific form of human presence on the landscape, combining elements of predator deterrence, livestock monitoring, and grazing management, while facilitating producer compensation for livestock losses and relationship-building in rural communities. Interviewees described diverse benefits of range riding, including reduced livestock losses, improved communication between riders and ranchers/landowners, and its role in helping sustain working landscapes amid broader socio-economic shifts. However, programs face significant challenges: limited long-term funding, high labor demands, and difficulties in hiring and retaining skilled riders capable of building trust with ranchers and the broader community. Ironically, the success of range riding in reducing depredation can jeopardize its continued funding – a dynamic we term the “paradox of prevention.” Our findings suggest that range riding represents a return to traditional rangeland practices – “cowboying” – amid novel political and economic circumstances. As such, its future depends on durable funding, supportive policy frameworks, and recognition of its role in shaping coexistence between predators and people in the New West.

KEYWORDS

human-wildlife conflict and coexistence, American West, non-lethal conflict reduction tools, predator-livestock conflict, range riding

1 Introduction

The return of wolves (*Canis lupus*) and grizzly bears (*Ursus arctos horribilis*) to the landscapes of the American West over recent decades has brought new challenges of shared space between recovering predator populations, residents, and resource users – particularly livestock producers (Fascione et al., 2004; Clark et al., 2005). Recent research on regional conflict reduction between wolves and livestock (Martin, 2021b; Martin et al., 2021; 2025; Anderson et al., 2023; 2024), along with a growing gray literature on producer best practices (Barnes, 2015; Stone et al., 2016; Collins et al., 2024; Nickerson et al., 2024), have pointed toward the effectiveness of human presence for reducing livestock depredation (Wilkinson et al., 2020; Gonzalez et al., 2024). On contemporary western rangelands, where cattle are the predominant livestock type, human presence often takes the form of “range riding.”

Riding the range has a long history in the American West; indeed, the cowboy is perhaps the quintessential figure of the American range in popular consciousness. Since the late 2000s, *range riding* aiming to mitigate predator-livestock conflict (among other goals) – by professional riders, often funded by community-based non-governmental organizations (NGOs), landowner-led conservation groups, or state and federal wildlife agencies – has begun to emerge. Although range riding is increasingly prevalent throughout the region, however, there is limited scholarly work on the practice (cf. Parks and Messmer, 2016; Bogezi et al., 2021; Louchouart and Treves, 2023; Anderson et al., 2024). Additionally, residents and stakeholders hold varying perspectives on what range riding is (its definition) and whether it works (perceived effectiveness). Debates over range riding are further complicated by the fact that it can involve different combinations of practices and organizational structures, depending on the social, economic, and ecological context of its use.

To better define the contours of this increasingly important topic, this study explores range riding’s definition and perceived effectiveness by engaging with on-the-ground examples and situating them within the broader context of political-economic, demographic, and land use changes associated with the so-called “New West” (Riebsame and Robb, 1997; Robbins et al., 2009; Charnley et al., 2014; Martin et al., 2019). In doing so, we propose that the questions surrounding range riding are fundamentally bound up with not just predators and livestock, but also the future of land use and resource management in the region. Toward these ends, we ask:

1. How has range riding been defined by range riders and range riding coordinators in the American West? What practices are involved, and with what stated aims?
2. What are the perceived challenges and benefits of range riding programs?
3. What are the costs and funding mechanisms associated with contemporary range riding programs?

2 Background

The history of the American West is one of shifting relations of labor and land access. The western range as a site of livestock grazing emerged out of colonial dispossession, displacement, and the genocide of Indigenous peoples aimed at the extension of state territory and private property (Wolfe, 2006; Farrell et al., 2021). The introduction of livestock – and the practice of riding the range – was deeply intertwined with broader colonial projects, serving as a means for European settlers to assert control over land and resources previously managed by Indigenous communities. The montane, semi-arid character of landscapes west of the 100th meridian presented a challenge for crop agriculture prior to irrigation (Fiege, 1999). However, such landscapes provided an important resource base for seasonal and spatially extensive livestock grazing (Stegner, 1992 [1962]; Knight et al., 2002), which in turn was used to lay claim to large territories – first through transitory sheep production (Wentworth, 1948; McGregor, 1989) and subsequently cattle (Sayre, 1999).

Ranching as an economic activity is based on grazing livestock for sale in a market economy, and relies on extensive labor across large and generally privatized landscapes (Ingold, 1988 [1980], 4, 236). In the second half of the 19th century, the western range was public domain, with the federal government allowing private ranchers to graze livestock unfenced and without formal regulatory oversight. In these open access conditions, shepherds and cowboys played an important role in protecting livestock and directing them toward prime forage. Although informal local norms and community efforts at resource management developed over time, the massive influx of cattle numbers, combined with market pressures, federal policies, national politics, and inhospitable climatic events, resulted in sometimes violent competition for forage, significant overgrazing, and resource depletion in the region (Rowley, 1985; Sayre, 1999; Huntsinger, 2016).

These pressures led to the (en)closure of the range: first through barbed wire fencing in the 1870s (Ingold, 1988, 245; Netz, 2004; Sayre, 2017), and later via governmental regulation. The open range era came to an end with the Forest Reserve Act of 1891 and the Taylor Grazing Act of 1934, establishing what would become the U.S. Forest Service (USFS) and Bureau of Land Management (BLM), respectively. Access to public lands for grazing was henceforth governed through the long-term lease of allotments, serving as a pseudo-property relationship alongside private deeded lands (home ranches) (Rowley, 1985; Sheridan, 2007; Martin, 2024). With expanded regional and national market integration via rail, ranch owners were motivated to maximize financial returns on their livestock investments, and the cowboy was increasingly transformed into a wage laborer (rather than a “quasi-kinsman”) (Ingold, 1988, 249; Sayre, 2015; 2017, 45–59; see Wentworth, 1948 and McGregor, 1989 on similar dynamics in sheep production).

Although predator extirpation was well-underway by the turn of the century, economic pressures toward reducing labor costs and optimizing pasture use required “continuous wholesale

extermination of predators” (Sayre, 2017, 16, 56; on the earlier history of predator removal, see Coleman, 2008; Wise, 2016; Rutherford, 2022). Pastoralists globally have generally sought to eliminate the destructive impact of *predation* on livestock – largely through defensive measures. Western ranchers, for their part, sought to eliminate *predators as such* through the sorts of offensive campaigns that nearly extirpated gray wolves and grizzly bears in the contiguous U.S. by the early 20th century (Ingold, 1988, 238; Emel, 1995; Hawthorne, 2004).¹ With predator eradication cowboys would play a less prominent role, with producers shifting toward a less labor-intensive and/or deskilled production model, as the landscape was made safe for livestock (Sayre, 2017, 16, 54–56).

In the latter half of the 20th century, however, human-predator relations in the West changed dramatically amid shifting public and scientific attitudes toward predators. Wolves and grizzlies gained protection under the Endangered Species Act in the mid-1970s. Wolf reintroduction in the 1990s (Fischer, 1995; Bangs and Fritts, 1996; Smith et al., 2003) was hailed as an ecological success, as populations rapidly expanded across the region, with emerging narratives of positive landscape-scale effects – although the extent to which wolves were the primary drivers of those changes has been debated (Soule and Noss, 1998; Ripple and Beschta, 2004; 2005; 2012; cf. Mech, 2012; Middleton, 2014; Marris, 2017). However, predator return has also sparked socio-political controversy, becoming an emblematic instance of human-wildlife conflict bound up with livestock depredation (Woodroffe et al., 2005; Nyhus, 2016; Frank et al., 2019).

Alongside predator restoration, the American West has witnessed significant political, economic, and demographic shifts since the last quarter of the 20th century, resulting in what is often described as the “New West.” These shifts include a reduced centrality of formerly dominant extractive industries (e.g., ranching, timber, mining) alongside the growth of recreation, service, and high technology sectors (Baden and Snow, 1997; Riebsame and Robb, 1997; Winkler et al., 2007), as well as greater environmental protections, rural and exurban population growth, and amenity migration, often described in terms of “rural gentrification” (Walker and Fortmann, 2003; Ghose, 2004; Bryson and Wyckoff, 2010; Hines, 2010; 2012; Gosnell and Abrams, 2011; Fletcher et al., 2023). These changes have led to controversy and concerns over land use change and its ecological impacts (Sheridan, 2001; Hansen et al., 2002); the loss of quality jobs and rising cost of housing in amenity-rich areas; and the socio-political consequences of unevenly experienced development, with sometimes dramatic contrasts between immense wealth and rural poverty. Notably, human-wildlife conflicts have often been conceptualized as being bound up with this (contested) transition from Old to New West (Nie, 2003; Clark et al., 2005; cf. Manfredo et al., 2003; 2017; 2020).

Although the direct impact of livestock depredation is generally negligible at the level of the region or the industry as a whole, predators can significantly affect individual producers in particular times and

places (Bangs et al., 2005; Steele et al., 2013; Anderson et al., 2024), and such impacts are layered atop these broader New West political economic pressures. The combination of legal protections, human-wildlife conflict pressures, and public scrutiny associated with conservation have prompted the emergence of novel “coexistence”² efforts across the West and around the world, including adoption of nonlethal deterrents and new husbandry practices as an alternative to lethal removal for reducing depredation and mitigating conflict (Bangs et al., 2006; Sime et al., 2007; Martin, 2021b).

Insights from international research provide important context for these questions, highlighting both the challenges and possibilities of predator-livestock coexistence efforts. European studies, in particular, show that recovering predator populations often introduce new and overlapping conflicts, while outreach and mitigation programs can help reduce tensions but rarely resolve them fully (Davoli et al., 2022; Grossmann and Patkó, 2024). The effectiveness of coexistence initiatives also depends heavily on governance structures, institutional support, and the attitudes and trust of local stakeholders (Hartel et al., 2019; Kiffner et al., 2025; Ostermann-Miyashita et al., 2025). In some regions, cultural tolerance and traditional practices have created more enduring foundations for coexistence (Dorresteijn et al., 2014). Globally, compensation remains one of the most widely used tools, though it is debated because it tends to address short-term losses without building lasting tolerance (Zabel and Holm-Müller, 2008; Ravenelle and Nyhus, 2017). Together, this body of work underscores that predator-livestock coexistence strategies are most effective when they integrate ecological, social, and institutional dimensions – a key consideration for evaluating emerging tools like range riding.

In our own research in the American West, *human presence* – often in the form of range riding, but also via sheep herders – has been noted as a key component of reducing depredation, alongside a range of other deterrents (Wilkinson et al., 2020; Anderson, 2021; 2024; Martin et al., 2025). Although broad scientific validation is lacking, several studies have documented notable benefits of range riding (Bangs et al., 2006; Bogezi et al., 2021; Louchouart and Treves, 2023; Parks and Messmer, 2016; Stone et al., 2016; 2017; Wilson et al., 2017). One distinct advantage of the approach is its applicability on large public grazing allotments, a feature that sets it apart from many other nonlethal conflict mitigation tools (Anderson et al., 2024; Martin et al., 2025).

Range riders may be employed by a single ranch or shared across multiple operations within a region, which can extend their coverage. By increasing oversight of livestock over extensive grazing areas, range riders can monitor animal health and remove predator attractants proactively (Louchouart and Treves, 2023; Parks and Messmer, 2016). In addition to its potential to reduce conflict and support coexistence, one study found that range riding may also help build community trust and cohesion in predator-occupied rural areas by fostering communication and raising awareness of

¹ Gray wolves were extirpated from most of the contiguous U.S. by the 1930s, with grizzly bears following a similar timeline. Given the extensive geographies involved, however, significant uncertainties surround any estimates of predator numbers and range.

² We recognize that the term “coexistence” is contested; some of our co-authors have written about these questions elsewhere (Martin et al., 2021). We retain it here and in the title due in part due to its capacious meaning, and given its usage by many promoters of range riding across the American West.

predator activity (Bogezi et al., 2021). Despite these reported benefits, empirical evidence of range riding's effectiveness remains limited, and little research has explored the experiences or perceptions of participating range riders and ranchers.

Furthermore, range riding programs face significant challenges that have not been thoroughly examined. Parks and Messmer (2016) identified the lack of stable, long-term funding as a major threat to program sustainability. In addition, the significant labor demands required to maintain these programs remain underexplored, though are a potential challenge for an industry that has operated with reduced labor budgets since the mid-20th century (on the shifting dynamics of labor and ranching economics, see Robbins, 1994; Starrs, 2000; Knight et al., 2002; Sayre, 2017; Perritt, 2019).³ Although counterexamples exist – including holistic management and similar approaches (Gosnell et al., 2020) – rangeland cattle production in the West has largely shifted to a reduced labor model. This shift is related in part to the reduction of family labor availability associated with regional transformations and socio-economic pressures (on ranchland ownership changes, see Gosnell and Abrams, 2011; Gosnell et al., 2006; on the broader dynamics of labor and agrarian capitalism, see Mann and Dickinson, 1978; Mann, 1990). At the same time, western livestock producers now face increased demands for “boots on the ground” due to resurging predator populations – a tension that has been inadequately explored in the literature.

Although there is a long-standing tradition of *riding the range*, the context in which *range riding* takes place today is novel, converging as it does with industry shifts, regional transformations, and predator population recovery – raising important questions over whether and how old tools can work in the New West.

3 Methods

3.1 Study area

Range riding programs have been implemented in several western states, including Colorado, Idaho, Montana, Oregon, Washington, and Wyoming, as documented in both academic and public sources (e.g., Parks and Messmer, 2016; USDA Animal and Plant Health Inspection Service, 2022; Thompson, 2023; Gonzalez et al., 2024; Nickerson et al., 2024; Van Hauen, 2024). For this study, we used a qualitative, case study approach (Small, 2009; Drury et al., 2011; Macon and Whitesell, 2021), selecting three range riding programs in western Montana – a region with a long history of human-wildlife conflict and coexistence efforts. Western Montana was an early site of regional wolf recovery and is currently experiencing expansion of grizzly populations, making it an ecologically significant and socially dynamic area of shared space between predators and livestock operations, a “nexus of encounter” for addressing human-wildlife conflict (cf. Martin et al.,

2025). This region, encompassing vital wildlife connectivity corridors (Figure 1), has emerged as a hotspot for conflict in recent years (Peck et al., 2017; Sells et al., 2023; Smith et al., 2025) and a proving ground for collaborative conservation initiatives such as the Blackfoot Challenge (Burnett, 2012; Wilson et al., 2017; Belsky and Barton, 2018).

Montana's approach to managing large carnivores, including bears, mountain lions, and wolves, reflects the state's commitment to balancing human safety, livestock protection, and wildlife conservation. Classified as “large predators” (MCA 87-1-217), these species are managed with an emphasis on mitigating conflicts to sustain public support for conservation (MCA 87-5-301). Grizzly bear management prioritizes a combination of nonlethal strategies, preventative interventions, and lethal control measures (MCA 87-5-301). Although grizzlies remain federally classified as an endangered species, livestock owners may take nonlethal actions to safeguard property and are authorized to use lethal removal in cases of livestock depredation without prior licensure (MCA 87-5-301). Similarly, wolves – federally delisted from the ESA in Montana in 2011 – may be selectively culled when identified as “problematic” due to repeated livestock depredation, provided state objectives for maintaining breeding pairs continue to be met (MCA 87-1-217). To further support livestock producers, Montana's Livestock Loss Mitigation Program (MCA 2-15-3112) offers financial compensation for losses caused by predators.

Montana is home to some of the longest-running range riding programs in the U.S. The programs included in this study, located in the Big Hole Watershed (Big Hole Watershed Committee), Blackfoot Valley (Blackfoot Challenge), and Tom Miner Basin (Tom Miner Basin Association), were established in 2008, 2010, and 2012, respectively. These programs were established before many comparable initiatives in the West, which generally started around 2012–2014 or later (Parks and Messmer, 2016). Since then, interest in and funding for such programs across the western U.S. have continued to grow – e.g., funding through U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) Regional Conservation Partnership Programs for conflict reduction practices, including range riding (O'Connor, 2024), and the 2024 establishment of the Colorado Range Rider Program (Butzer, 2024; Blumhardt, 2025). Figure 1 shows the approximate areas served by these three programs, situated within Montana's critical wildlife corridors. These programs operate between grizzly bear recovery zones and within the current ranges of wolves and grizzly bears (Montana Fish, Wildlife, and Parks, 2025; U.S. Fish and Wildlife Service, 2022) (Figure 1). Notably, this region comprises approximately 40% private rangelands (Graves et al., 2019), underscoring the importance of private lands in Montana ranching (contrast this with other areas of the West, where public lands play a more prominent role; see Martin, 2021b; Anderson et al., 2024). This area also illustrates broader New West dynamics, such as the relative decline of extractive industries, the rise of recreation- and service-based economies, and shifting patterns of land ownership, including amenity migration and absentee ownership (Gosnell et al., 2006; Gosnell and Abrams, 2011; Epstein et al., 2022). These factors position western Montana as a

³ Western rangeland sheep production, in contrast with cattle, continues to rely on herders – largely through the H-2A visa program – who play a comparable role to range riders and in part account for the early adoption of nonlethal methods in that sector (Martin, 2020; 2021b).

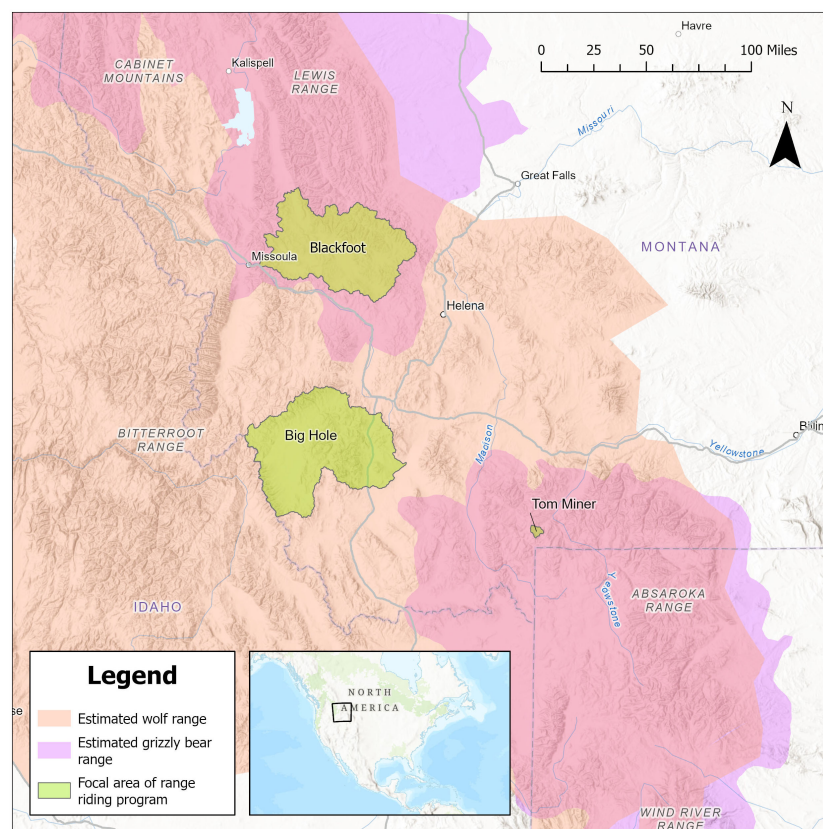


FIGURE 1

Approximate areas served by the three range riding programs represented in this study: the Big Hole Watershed (Big Hole Watershed Committee), the Blackfoot Valley (Blackfoot Challenge), and Tom Miner Basin (Tom Miner Basin Association). Estimated grizzly bear range (USFWS 2023) is shown in purple, while estimated wolf range is shown in peach (Montana Fish, Wildlife and Parks 2015; Idaho Department of Fish and Game 2016; Wyoming Game and Fish Department, et al. 2023).

microcosm of the challenges and opportunities inherent in balancing conservation and livelihoods in the New West.

3.2 Data collection and analysis

Study sites were identified through the researchers' existing networks, and interview participants were selected based on their interest and willingness to contribute and the recommendation of other interviewees via snowball sampling (Patton, 2014). Two authors (AS, TK) gathered primary data for this study using in-depth, semi-structured interviews with specialized informants ($n = 7$) (Bernard, 2017).⁴ These included range riding program coordinators and range riders themselves across three locally led community organizations in western Montana (Table 1). Interviewees were purposefully selected (Robson and McCartan, 2016) based on their familiarity and experience with range riding, predator-livestock conflict and coexistence, and leadership in the organization and community in which programs operate. Although family labor often plays a role in ranching operations across the region, our

focus was on range riders as hired labor working with existing organizations in the area.

Interviewees included seven individuals from across the Tom Miner Basin Association, Blackfoot Challenge, and Big Hole Watershed Committee (Table 1). We conducted interviews during the fall and winter of 2023, both in-person ($n = 3$) and remotely over Zoom ($n = 4$). Interviewees included men and women, ranging in age from late 20s to early 60s. Their experience spanned from less than five years to more than a decade of range riding. Some were long-time community members, while others came from outside the communities where they worked. Motivations also varied, from an interest in work outdoors, on horseback, to a focus on predator monitoring and tracking. It should be noted that some interviewees worked for more than one range riding program, and thus drew on their cumulative experience. An interview guide was used to ensure consistency and comparability across interviews (Hesse-Biber and Leavy, 2011; Patterson and Williams, 2002). Interviews lasted between 60 and 120 minutes each, and were audio-recorded, professionally transcribed, and coded (by TK) using MAXQDA 22. All interviews were carried out with the participants' informed consent and adhered to ethical standards for social science research involving human subjects as outlined in the CITI Program training. This included safeguarding participants' anonymity by redacting any

⁴ Interview numbers were capped for practical reasons as well, including USDA Forest Service research restrictions.

TABLE 1 Overview of Montana range riding programs represented in this study.

	Program start	# of range riders	Land tenure of range riding coverage	Predators of concern for depredation
Big Hole Watershed Committee	2008	1	Primarily public lands (Forest Service, BLM, State)	Wolves (primary) Grizzly bears (new to area, secondary)
Blackfoot Challenge	2010	2	50/50 Private and public lands	Both grizzly bears and wolves (primary)
Tom Miner Basin Association	2012	Variable (currently 1)	Primarily private lands and some Forest Service	Grizzly bears (primary) Wolves (secondary)

personally identifying information from the transcripts (in what follows, we refer to “interviewees” or “participants” rather than including any potentially identifying comments on informants’ positionality). This study received exempt status from Oregon State University’s Institutional Review Board in September 2023 under permit HE-2023-583.

We asked interviewees about their personal background, the geographic context in which they live and work, how they define range riding, and what it entails (i.e., specific tools, practices) in their community. We then asked them about their perspectives on the benefits and challenges of range riding: their perceptions of range riding’s effectiveness for reducing conflict and other potential co-benefits, the costs and funding mechanisms for programs/riders, and community perceptions (good and bad) that influence implementation. We concluded by asking about interviewees’ perspectives on the future of range riding programs in their area and more broadly. All of this was further informed by ethnographic observations gathered around the interviews themselves.

Document analysis supplemented interviews to help us better understand the organizational structure, practices, and funding associated with range riding programs in the region. We reviewed nonlethal conflict reduction toolkits and articles from NGOs (e.g., Stone et al., 2016; Mallon, 2018; Conservation Northwest, 2022),⁵ as well as research summaries from federal agencies (e.g., U.S. Department of Agriculture, 2021). We also reviewed Montana agency websites and state policy (e.g., Montana Livestock Loss Board, 2025; Montana Livestock Loss Board, 2023; MCA 2-15-3110; MCA 81-1-110), as well as reports from federal agencies (e.g., National Fish and Wildlife Foundation, 2023; National Fish and Wildlife Foundation; U.S. Department of Agriculture, 2023a; 2023b; U.S. Fish & Wildlife Service), the federal government (e.g., The White House 2022), and federal policy (e.g., Public Law 111-11) to refine our understanding of available state and federal funding opportunities.

Two authors (AS, TK) employed an iterative process to analyze the data, connecting concepts through reading, interpretation, and social theory (Layder, 1998; Strauss and Corbin, 1990). An initial codebook was developed from the key topics in the interview guide. Emergent topics were added, resulting in a final codebook with 33 codes. The initial analysis organized data into domain summaries based on interview questions, followed by a more interpretive phase to identify themes across interviewees’ descriptions and

perspectives on range riding programs. Data were shared and discussed among the full research team during regular virtual meetings held throughout 2024. Analysis and interpretation of interview findings were informed by prior research conducted by members of the team, including ethnographic and archival research encompassing a wide range of stakeholders involved in wolf-livestock conflict and coexistence efforts across the American West (Anderson, 2021; Anderson et al., 2023; 2024; Epstein and Haggerty, 2022; Epstein et al., 2022; Martin, 2021a; b; Martin et al., 2021; 2025). Our goal with this paper is to provide a high-level overview of range riding as an emerging approach to coexistence, a notable gap in the literature and in our own previous research findings. Because little has been written on this practice, the strength of our analysis lies in introducing its key dimensions and highlighting its significance for the broader literature on human–wildlife conflict and coexistence.

4 Results

4.1 Definition, purpose, and practices

Interviewees coalesced around the perspective that an essential element of range riding is “human presence” on the landscape (1, 5), serving as “eyes and ears” (4, 7) via horseback or ATV to check livestock and monitor for and deter predators.⁶ One participant noted range riding involves “a heightened awareness” and interpreting the landscape to track wildlife or cattle (1). Another described it as:

...going out onto land in the morning with ... an open focus, really feeling into place. Feeling into land, being aware, being passive enough to listen to the story that’s unfolding out there. And then ... you’re putting yourself out there as a consistent, patterned human presence (2).

Secondary sources align with this broad definition of range riding as “the application of human presence” to reduce livestock vulnerability to predators (U.S. Department of Agriculture, 2021; Mallon, 2018; Nickerson et al., 2024). However, interviewees also described range riding as highly variable, shaped by terrain, predator density or composition, and rancher/landowner needs. Participants often prefaced definitions with personal context, such

5 NGO materials were treated as descriptive sources, rather than evaluative, given their advocacy role.

6 Parentheses around a number indicate research participant; i.e., (5) is participant number 5.

as “range riding *for me*” (3) or “*our* definition of range riding” (7) (emphasis added). Range riders typically received little formal training, with most learning on the job. Some programs offered occasional clinics, tracking classes, or predator safety sessions, but opportunities varied and were often limited. Overall, training was minimal and skills were developed largely through experience.

Range rider activities typically include monitoring and managing livestock (e.g., movement in and out of pastures), locating carcasses, and tracking predators using tools like trail cameras. However, while all range riding programs aim to reduce predator-livestock interactions (and thus conflict), their foci can differ: some emphasize predator monitoring and carcass management, while others prioritize livestock health and grazing management. One interviewee summarized:

Range riding looks different from landscape to landscape and what every individual[s] needs are. Range riding for us is finding carcasses as fast as we can so that people can get producers compensated for those losses ... In other places it's about soil health and grazing plans and ... it's not just a conflict and predator situation (2).

Predator-focused programs prioritize tracking, deterrence, and carcass management. One participant explained:

I check cattle along the way when I run into them, but I don't go looking for cattle. I'm looking for wolves and bears and I spend all my time looking at dirt [for predator tracks or scat] ... My objective is to hassle the wolves so they're so worried about what I'm doing and why I'm there ... that they just don't get comfortable (3).

Livestock-focused programs, in contrast, emphasize herd management and “low-stress handling techniques”⁷ – “the idea of training cattle to work as a herd ... gathering them, moving them, settling them” (5) – to mitigate depredation risks.

Interestingly, interviewees noted how, despite a focus on livestock health, their role requires a sense of accountability and acceptance of *some* livestock loss:

In wild places, [we] are responsible for what we put out on the land. So it's irresponsible to be angry and upset and overwhelmed at loss if one is putting domestic ungulates in a wild place with large carnivores and then not having the tools and ways to check on those cattle and to manage those cattle (2).

Another interviewee echoed this sentiment saying, “bears will be bears, and you can't be out there all the time ... [and producers] account for that loss” (1).

Carcass management also varies: some programs focus heavily on finding carcasses for compensation, while others find it unrealistic due to challenging terrain (compare [Anderson et al., 2024](#)). Additionally, decisions often depend on landowner preferences, balancing a desire for compensation for depredations with concerns about predator removal. One interviewee explained that when range riders find a carcass, “the landowner decides” if they want to call Wildlife Services.⁸ Given concerns around potential lethal intervention – as “some people like the wolves and the bears and they don't want to see them get killed” (4) – some landowners may prefer not to call.

Beyond their primary duties, range riders often assist with ranch tasks (e.g., checking water or mineral blocks, vaccinating livestock, helping with ecological monitoring), educate the public about wildlife, and communicate with producers about livestock and predator activity. Additionally, reports and updates shared by range riders foster collaboration and co-learning among producers, wildlife agencies (e.g., Montana Fish, Wildlife, and Parks [FWP] and Wildlife Services), and communities. Interviewees frequently described range riders as important conduits of information regarding livestock and wildlife, and “opening the lines of communication” (4) within the community. Secondary sources corroborate these findings, emphasizing range riders' roles in facilitating communication, managing livestock, and supporting wildlife monitoring ([Stone et al., 2016](#); [Mallon, 2018](#); [U.S. Department of Agriculture, 2021](#)).

4.2 Perceived benefits and challenges

We explored interviewees' perceptions of range riding efficacy in reducing predator-livestock conflict as well as its broader benefits. Most described range riding as effective or successful in terms of reducing livestock depredations, as “predators moved away [from livestock] in the presence of ... riding” (5), resulting in “very real numbers” (2) of financial impact. One interviewee shared, “over the course of ... doing my job, reported depredations dropped 80%” (3). Others expressed confidence in their use of range riding, stating “we should keep doing what we're doing, keeping the depredations down” (6).

Despite positive perceptions, interviewees also acknowledged the difficulty of *measuring* effectiveness. As one explained: “You're essentially trying to prove what you've prevented” (7) – i.e., the absence of depredation. Another reflected on the more intangible aspects: “There are a lot of immeasurables that go into range riding that can really never be measured, but that we're certain help” (2).

⁷ Again we recognize that this term remains contested among producers, yet it is also used by many ENGOs as well as range riding programs themselves.

⁸ U.S. Department of Agriculture Animal and Plant Health Inspection Service Wildlife Services, the federal agency generally responsible for determining the cause of livestock death and thus initiating compensation processes.

Such immeasurables include more frequent communication with producers; greater proximity of livestock to the home ranch (and, subsequently, greater frequency of monitoring); changes in animal/herd behavior (i.e., flightiness vs. a tendency to stay with the herd); and effects on landscape features – all of which can positively influence producer outcomes, but which are challenging to quantify. Interviewees thus alluded to the ways in which “effectiveness” includes not only the absence of depredations, but also changes in livestock and predator behavior as well as broadly beneficial social and environmental effects. Several noted that range riding helps ranches to remain economically viable, and thereby indirectly preserves working landscapes – along with the ecosystem services these lands provide, such as wildlife habitat and migration corridors (Sheridan, 2001; 2007). One interviewee explained:

The alternative to cows is condos so if ... those ranches get subdivided and sold then it's just going to be a bunch of houses or a bunch of huge houses for wealthy out-of-staters. Those open lands are really important for wildlife, for ... the aesthetic of the valley [and] of the watershed that we call home. When you're floating down the river ... and you're looking at all the beautiful land around you, it's because of ranchers. It's because you're looking at somebody's ranch (7).

Another interviewee echoed a similar sentiment, saying:

We aren't talking about keeping wolves and bears alive. We're talking about keeping cattle alive and keeping large landscapes intact, keeping ranches economically viable so that we can have these private lands for migration and so [range riding is] sort of a Trojan horse project in a lot of ways where you're coming in secretly sort of protecting cattle and not secretly but [at] the same time, and same mechanism you're protecting all the other things that make this place wild (2).

When asked about the challenges facing range riding programs, interviewees' responses centered on the new social dynamics that range riding programs introduce into a community. Interviewees emphasized how relationship- and trust-building among range riders, ranchers/landowners, and communities “is one of the harder things” to accomplish (5), especially in tight-knit rural areas where privacy concerns loom large. Several explained how ranchers and landowners they work with “can be a little wary of people they don't know” (7) or “don't want people knowing anything about them” (3). Some ranchers are cautious about publicly participating in range riding programs, fearing judgment from community members around controversial topics like livestock and predator management. One interviewee recounted:

[One] rancher ... lets me ride his place, but he don't want to have his name on the paper because then he's associated... 30% or 50% [of community members] don't appreciate what I'm doing, think it's a bunch of animal activist stuff. They don't

want those people to know that they're associated, but they let me ride (3).

New programs entering established communities also faced tension, as described by one interviewee:

There was a power struggle going on between the program and ranchers. When you build something new and there is a lot of attention, people want to be a part of it and then you have different perspectives on how to be part of that ... and who should be the face and how to make those decisions. There's people who've been there for a long time and there's a sense of history and how those things should be done and who are the historical leaders (5).

Several interviewees also noted that hiring seasonal riders from outside the community further complicated trust-building. One explained that for these riders, “if you don't build that trust right away, then you don't get it” (2). As another described, ranchers may be “wary of people they don't know and don't want [them] around their cattle, potentially knowing how many losses they're having and what condition their cattle are in.” They may be hesitant to engage with outsiders, asking, “Who are you? Why should I bother talking to you if you're not going to be here next year?” (7). Thus, local hires were seen as more effective at fostering trust, although turnover remains an issue. As one interviewee summarized: “We are always trying to get [range riders] to come back” (5).

Other less frequently mentioned concerns remain potentially significant, and provide openings for future research. These include safety risks for range riders working near predators; understaffing in September (when bears are highly active but range riders are often unavailable due to the start of the school year or other seasonal job commitments); and an insufficient number of real-time alert cameras for effective predator monitoring.

4.3 Costs and funding

Our review of the literature shows that support for Montana range riding programs comes from a diverse mix of public and private sources. For the three programs represented by our interviewees, funding streams included federal grants, BLM, Montana FWP, the Montana Livestock Loss Board (LLB), environmental NGOs, in-kind donations from producers (e.g., housing, equipment), and donations from community members (e.g., contributing to range rider payrolls).⁹

The LLB plays a particularly significant role in the state, with two of the three investigated programs receiving funding from LLB's Livestock Loss Reduction Program. Established in 2007, the LLB incentivizes producers to mitigate livestock depredation through nonlethal conflict reduction tools, including range riding,

⁹ Note that data here are current up to 2024, and do not account for subsequent federal funding shifts.

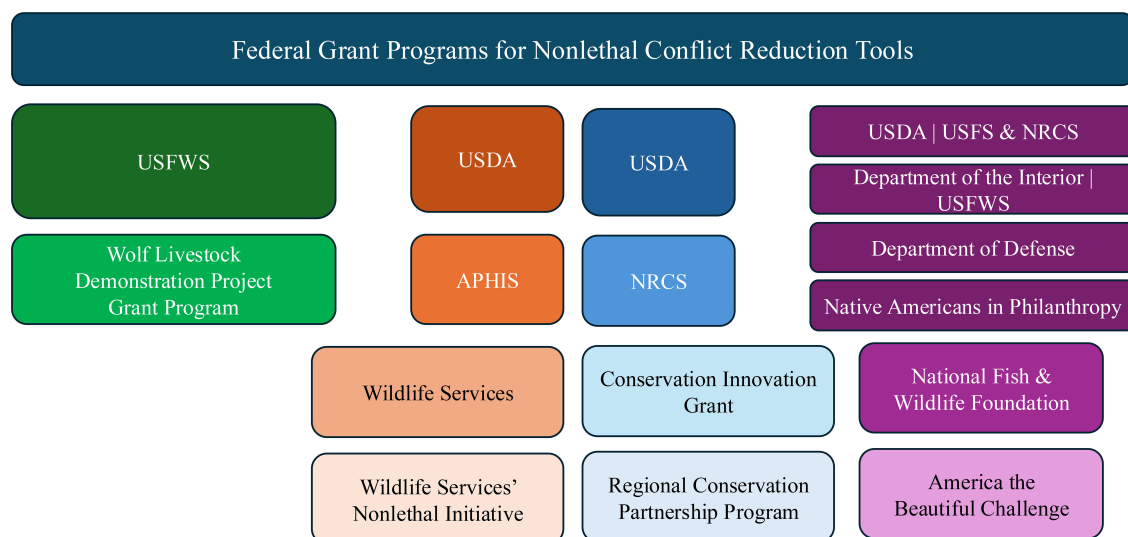


FIGURE 2

Federal grant programs for nonlethal conflict reduction tools, circa 2024. Programs are listed under the federal agency or agencies that administer them, with color matching for clarity.

carcass removal, fladry, and guard dogs (Montana Livestock Loss Board, 2025). Funding comes primarily from the Montana Legislature's livestock loss reduction and mitigation special revenue account, administered by the Department of Livestock, with occasional federal contributions (MCA 2023, 81-1-110; Montana Livestock Loss Board, 2023). The LLB identifies priority projects for grant funding based on depredation history (e.g., chronic, multiple, single, or risk for depredations based on habitat location), predator-type (e.g., grizzly bears, wolves, mountain lions), size of producer operation(s), land tenure, and reliance on livestock production as a primary source of income for producers (Montana Livestock Loss Board, 2023). Grant recipients must use funds on approved tools to reduce conflict with grizzly bears, wolves, and mountain lions (MCA 2023, 2-15-3110, 2-15-3111). Cost-sharing is required for these projects, with a 30% match for grizzly bear efforts and a 50% match for those addressing wolves or mountain lions. The match is typically provided by the applicant – often an NGO such as the Blackfoot Challenge, although it may also be an individual producer – and can be contributed in cash or in-kind (Montana Livestock Loss Board, 2023).

As of 2024, federal grant programs supported range riding and other nonlethal conflict reduction tools across the western states, and all of the programs in this study received at least some federal grant funding (Figure 2). Grant programs include the U.S. Fish & Wildlife Service's (USFWS) Wolf Livestock Loss Demonstration Project Grant Program, which provides states and tribes with funds for depredation prevention measures and compensation for confirmed losses (PL 111-11, USFWS n.d.,a). Between 2013 and 2023, Montana received \$736,000 for depredation prevention funding from the Wolf Livestock Loss Demonstration Project Grant Program; other states cumulatively received a total of \$5.1 million (U.S. Fish & Wildlife Service). USDA's Animal and Plant Health Inspection Service provides funding for conflict reduction

through Wildlife Services' Nonlethal Initiative, supporting tools such as range riding, fladry, livestock guard dogs, and electric fencing (U.S. Department of Agriculture, 2025). The USDA NRCS also operates several grant programs (e.g., the Conservation Innovation Grant, the Regional Conservation Partnership Program), which have supported diverse conservation efforts including range riding and carcass removal. Lastly, the America the Beautiful Challenge is a public-private grant program administered by the National Fish and Wildlife Foundation, which combines federal funding (from the Department of the Interior, USDA Forest Service, Natural Resources Conservation Service, Department of Defense, and Native Americans Philanthropy) with private and philanthropic funds to support land, water, and wildlife conservation across the U.S. In 2023, the National Fish and Wildlife Foundation awarded approximately \$5 million from the America the Beautiful Challenge to Montana FWP for a project focused on landowner-led carnivore conflict reduction in western Montana, led by the Heart of the Rockies Initiative. Figure 2 summarizes the pathways for federal funding of range riding programs.

Contemporary range riding requires significant funding to support the labor, tools, and equipment involved. Range rider wages ranged from \$17 to \$22 per hour in 2023, depending on the program. When asked about the total cost of employing a range rider, estimates ranged from \$5,500 to \$15,000 per range rider per season, largely depending on which additional expenses were covered. Programs typically supply job-specific tools such as game cameras, bear spray, and fladry, while some also provide additional items like new tires (for ATVs used to range ride), boots, or binoculars. One program offered their riders "tiny houses and ... horse care" (2) as well as allowing riders to "ride the horses here" (1). Programs may also cover liability insurance or reimburse mileage for personal vehicle use.

Among the programs we investigated, those responsible for securing funding had mixed views on availability and difficulty. One interviewee explained “it’s really not that hard to find funding at this point for range riding” (2). Contrastingly, other interviewees reported few funding sources for range riding programs. Another explained that across the range of predator-livestock conflict reduction options, including “electric fence fladry, range riders, and carcass management ... range riders is probably the toughest of those three to fund” (4). Another program coordinator described that “there are millions of dollars out there for stream restoration, lots of different sources, but there’s just not that many sources for ... wildlife conflict reduction” (7).

For some, securing match funds for federal grants can present a significant challenge. As one interviewee noted:

A lot of sources, even state grants, are federally funded ... [so] their match cannot be federal funds, but that makes it really difficult. You’re always ... scrambling to find private funding that you can use as [a] match (7).

To meet matching requirements, some programs rely on in-kind contributions, such as housing or equipment loans provided by producers. A producer might “pay for the housing for a range rider” (2), or “let us borrow their tractor, and that’s worth X amount, and that’s our match” (7). However, other types of support, such as program coordination or staff time, are typically ineligible as match funding, creating challenges for nonprofits that rely more on labor than physical assets.

For others, securing adequate resources over the long term remains challenging. One interviewee highlighted the difficulty of justifying funding due to reduced depredations:

We’ve had very few depredations over the last several years [and] it’s coming back to bite us a little bit because [the] Montana Livestock Loss Board ... is starting to question ... how much need we really have, since we’re having no depredations (7).

This interviewee further explained that “there have been depredations on neighboring private lands” (7). From their view, reduced depredation rates where riding occurred was a sign that the program was indeed effective, yet could be used to justify reduced funding – an irony that threatened long-term success.

Short funding cycles of federal grants further exacerbate the uncertainty of program support. Participants routinely noted the challenge of needing to reapply every year – that it was cumbersome and time-consuming – as well as the uncertainty of whether or not funds would be received, hindering long-term planning. One interviewee explained:

The funding cycles change a lot because [the state is] waiting for federal funding, and you never know when their funding is going to be available, so there have been years that we’ve run

our program entirely out of our general fund (7).

Interviewees highlighted that short funding cycles may also lead to “donor fatigue,” whereby philanthropists may question program progress and stability, saying “we’re over 20 years into that [strategy] ... haven’t you figured out how to pay for this yet?” (4). This points to the question of the economic sustainability of range riding programs – and, by extension, who pays. Several interviewees discussed whether programs should remain temporary, with costs and responsibilities shifted to producers over time. One coordinator contended:

Range riding programs are never supposed to be permanent ... [they’re] supposed to get people started, teach them the techniques, and then have individual producers take on that responsibility themselves (1).

Another interviewee echoed this sentiment, stating that “a successful range riding program long-term is one that is not funded long-term,” and that instead “producers [should] understand that this is part of their budget, part of raising prey [livestock] next to Yellowstone” (2).

Others, however, discussed the added time and costs represented by range riding practices as a significant barrier to their adoption. One interviewee explained:

A lot of these ideas and concepts were brought about maybe hoping that folks would adopt these practices on their own ... but ... we’re talking about a lot of money, a lot of time, a lot of effort (4).

Another interviewee also questioned whether these programs could be realistically funded solely by ranchers:

I’m making enough money that even if all ... of those ranchers got together, it’s a lot of money to pay me to ride for three months (3).

5 Discussion

Range riding has emerged as an increasingly prominent and promising approach for reducing predator-livestock conflict and promoting coexistence across the American West, yet there remain open questions over definition (what is included within the practice) as well as viability (its effectiveness and sustainability). Exploring the experiences of three Montana range riding programs, this research begins to speak to these questions and to address the dearth of scholarly work around range riding (cf. Parks and Messmer, 2016; Bogezi et al., 2021; Louchouart and Treves, 2023; Anderson et al., 2024). We hope that our findings will promote

further investigation of range riding and the emerging tensions between this practice and the regional context – the New West – in which it takes place today, including dynamics of socio-political polarization and the political-economy of livestock production.

Interviewees appeared to converge around a definition of range riding as *human presence on the landscape* that serves to nonlethally reduce predator-livestock interactions, including depredation. This definition is consistent with the limited extant literature on the topic, which describes the goal of range riding as increasing human presence and supervision of livestock while grazing (Bangs et al., 2006; Barnes, 2015; Parks and Messmer, 2016; Stone et al., 2016, 2017; Wilson et al., 2017; Bogezi et al., 2021; Louchouart and Treves, 2023). However, the frequency, duration, and type of interactions that range riders have with livestock and/or with predators varies, both in the literature and across our cases.

Range riding's goals and impacts combine elements of livestock husbandry and predator deterrence (Anderson et al., 2024), and extend beyond reducing predator-livestock conflict to include the promotion of livestock health, grazing management, and/or facilitating compensation for losses. As shown above, range riders and program managers expressed divergent views around the central aims of range riding, often leaning toward a holistic vision but one shaped by local context and the priorities of producers. Interviewees appeared aware of these differing understandings – note the multiple caveats: “for me” (3); “our definition” (7) – yet most also recognized the broader “win-win” benefits of range riding generally (compare Rosenzweig, 2003; Wilkinson, 2012; Barnes, 2015). This complexity reflects, perhaps, the diverse values at play in range and wildlife management in the region (Manfredo et al., 2017; 2020; van Eeden et al., 2017; van Eeden et al., 2025).

Such benefits depend on a *highly skilled* workforce – riders trained to assess forage and range health, manage livestock, track and deter predators with modern tools, treat sick or injured animals in the field, and build public trust. However, this broad skill set appears to be in tension with the limited resources available to attract and retain qualified riders. Relatedly, while one noted co-benefit of range riding includes building relationships across the diverse actors involved in predator coexistence, high turnover in these positions could also undermine the trust-building necessary for working with producers (Charnley et al., 2014; Stern and Coleman, 2015; Lauer et al., 2018; Lien et al., 2021).

Another central tension associated with range riding surrounds what we observe as the *paradox of prevention*. As several of our interviewees noted, successful deterrence can make it difficult to “prov[e] what you’ve prevented” (7) – and to thereby justify ongoing financial and institutional support of range riding efforts. This dynamic is doubly challenging when the locations and numbers of predators on the landscape are unavailable (Martin, 2021a; Merz et al., 2025; Martin et al., 2025). Indeed, this phenomenon has been highlighted around the assessment of nonlethal tools and techniques in other instances of predator-livestock coexistence (Stone et al., 2017; Martin, 2021b), and no doubt in part accounts for the frequent reference to co-benefits beyond conflict reduction: if there is added value provided by riders,

their continued use can be justified even when predators are not actively present.

This points toward perhaps the most daunting challenge for range riding (and conservation broadly; Malcom et al., 2019; Martin, 2021a; 2024) – that of *long-term economic support*. As one interviewee summarized, “a great deal of [the future of this program] lies in *money*” (9, emphasis added). Interviewees discussed “donor fatigue” and skepticism that programs “haven’t ... figured out how to pay for this yet” (4), as noted above. Although some argued that range riding programs should be aimed at “get [ting] people started” (1), with producers eventually taking on funding of range riders themselves, others explained that this would represent time and cost burdens on operations already working at thin margins (Reid et al., 2014; Woodall and Shannon, 2018; Smith et al., 2024) – a challenge further complicated by the differences between the up-front costs of equipment and the ongoing expense of added labor. Crucially, range riding differs from other common nonlethal tools and techniques – such as deterrents – in requiring ongoing labor over time; it is far from a “set it and forget it” approach requiring only an up-front investment (Martin, 2021b; Martin et al., 2021; Anderson et al., 2023).

Some interviewees argued that federal and state governments, rather than producers, ought to play a larger role in funding range riding programs given the history of government-sponsored predator reintroduction projects. This discourse mirrors themes of unevenly experienced costs and benefits of conservation – or environmental justice – raised in the literature (McInturff et al., 2021; Martin, 2024):

Shouldn't Wildlife Services be throwing a little in there because I'm telling them where the cattle is, where the predators are, where the dead cattle are? Shouldn't [Montana] Fish, Wildlife and Parks be throwing some in ...? I think that ... the government that was persuaded to ... place these animals in our backyard should be paying part of the bill (3).

In many ways, range riding is not new – the day-to-day practice of contemporary range riders entails many of the same skills, techniques, and activities as those of the traditional “cowboy”. Yet it takes place in a novel context, a New West of resurgent predator populations, novel land use pressures, limited labor budgets and other economic challenges facing ranchers, as well as shifting social values toward wildlife. Understanding range riding through what Fletcher et al. (2023) refer to as the “production-protection nexus” – namely, the interrelation between wildlife conservation and political-economic forces – is essential for addressing the challenges of sustaining and expanding range riding as a potential solution to producer-livestock conflict in the region. Range riding for *production* – protecting cattle and rancher interests – has different motivations than range riding for *protection* – preserving grizzlies and wolves on the landscape, and the landscape itself as open space. The removal of predators in the late 19th and early 20th

century shifted the landscape toward livestock production, and allowed for the establishment of grazing systems, and related economic and societal structures, that were less reliant on cowboy labor (Ingold, 1988; Sayre, 2017). The swing toward protection (of both predators, and relatively “wild” working landscapes) in the late 20th and early 21st century – in the context of shifting social values bound up with the New West – sparked a renewed need for range riders doing broadly similar work.

Many of these riders, as well as the environmental organizations that help fund their work, see their labor as a tool of predator-livestock coexistence – that is, integrating wildlife and nature protection with a thriving livestock production system, rather than seeing them as incompatible goals – even as producers they work with may be hesitant to be associated with these novel approaches. The ongoing shifts in economic systems and social values in the New West necessitate negotiation of these differing objectives, as well as associated shifts in funding, policy, labor models, producer practices, *et cetera*, in order to balance protection (conservation) with production (rural livelihoods). Range riding presents one potential tool for coexistence, for finding such a balance.

The question of coexistence is mediated through a highly variegated policy landscape, in which wildlife management measures across states can differ meaningfully (Merz et al., 2025; Martin et al., 2025). Some states, like Washington, mandate nonlethal conflict management measures and provide more state-funded support (Anderson, 2022). In others, like Idaho, Montana, and Wyoming, lethal measures (e.g., targeted removal by Wildlife Services, public harvest for wolves) are both allowed and easier to access (U.S. Fish and Wildlife Service et al., 2014; Bradley et al., 2015; Martin et al., 2025) – potentially moving producers away from a co-adaptation mindset (Carter and Linnell, 2016; Martin, 2021b; Anderson, 2022).

Another aspect, as noted above, is that cattle producers in the region largely moved away from a *labor-intensive* production model over the 20th century. The added labor costs of range riding today thus run counter to broader industry trends, especially given reduced availability of family labor when younger generations leave the family ranch. It is indeed notable that some of the earliest efforts promoting nonlethal tools in the region took place with sheep producers (who already had herders present on the landscape with their animals) or with larger-scale operations (that were able to cover added costs more easily through economies of scale) (Martin, 2020; Epstein et al., 2022). Thus far, environmental nonprofits and government agencies have played a central role in subsidizing the use of these tools across the region (Martin, 2021b, 2024). Interviewees pointed out the value of reliable, ongoing, “year-after-year partners, more than just funders” in supporting their work (2). Notably, this labor is also always *affective*, involving sometimes emotionally taxing engagement with diverse and at times antagonistic partners in order to sustain these efforts (Epstein and Haggerty, 2022). However, long-term support – and the potential of community-supported, bottom-up alternatives –

remains uncertain (Belsky and Barton, 2018; Haller et al., 2018; Martin, 2024).

Finally, range riding efforts can be further hindered by *polarization and animosity* surrounding predator conservation. As noted above, some producers “don’t want ... people to know that they’re associated” with range riding (3), highlighting producer concerns and the influence of social norms and attitudes towards outsiders or the government within the community (Hechter and Opp, 2001; Heberlein, 2012). Others did not want to work with particular environmental organizations given their association with anti-grazing litigation – a dynamic discussed elsewhere in the region (Charnley et al., 2014; Martin, 2021a; Swette et al., 2023; Martin, 2024). One interviewee was thus keen to note that their funding is “not just [from] environmental nonprofits, it’s Livestock Loss Boards, it’s federal and state money ... I think it’s really important for producers to know that as well because some of the traditional producers don’t want funds from those companies and organizations” (2).

6 Conclusion: old tools for the New West?

Range riding – and its vision of “cowboying for coexistence” – goes beyond merely reducing interactions between predators and livestock. At its best, range riding is also about sustaining rural livelihoods and shaping the future of land use in the American West. As our interviewees noted, range riding is about keeping cows from being replaced by condos (7; Sheridan, 2001), ensuring that open space remains intact – for predators, livestock, and humans alike – by keeping people on the landscape and actively engaged in stewardship activities. Much like land managers (Martin et al., 2021; 2025), range riders also play a central role in building trust – between environmentalists, agencies, and resource users – helping to “stitch the west back together” (Charnley et al., 2014; Parks and Messmer, 2016). Yet fulfilling this mediating role requires sustained financial support for those doing this work, and a broader reckoning with the political-economy of ranching, land use, and labor in the New West.

A focus on range riding highlights the complex “human dimensions” of human-wildlife conflict and coexistence, and as such has received less attention in the literature (cf. Ban et al., 2013; König et al., 2020). Our research has sought to begin filling this gap while identifying future research directions. These include: the individual motivations and values of range riders themselves; questions of equity and access to range rider programs; differences in effectiveness and unique challenges associated with implementation on public versus private lands (Jacobs et al., 2025; Martin et al., 2025); and finally, crucial questions of economic drivers, institutional support, and the relations between range riders and livestock operations.

Range riding has emerged as one of a suite of tools and techniques in use across the West, helping producers navigate and mitigate the challenges of sharing space with predators. The revival of “riding the range” connects the New West with an older west, and with a more intimate and embodied connection between producers and the land. However, the long-term viability of range riding programs and the benefits they provide appears to depend on resolving key issues of labor and funding. These issues, in turn, are bound up with questions of who holds responsibility for the economic costs of predator reintroduction, recovery, and conservation, with implications for human-wildlife coexistence more broadly.

Data availability statement

The datasets presented in this article are not readily available because we want to ensure the confidentiality of our study participants. Requests to access the datasets should be directed to Ada P. Smith, ada.smith@oregonstate.edu.

Ethics statement

The studies involving humans were approved by Oregon State University’s Institutional Review Board in September 2023 under permit HE-2023-583. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

AS: Project administration, Investigation, Writing – review & editing, Conceptualization, Writing – original draft, Methodology. JM: Project administration, Writing – original draft, Writing – review & editing, Conceptualization. TK: Methodology, Formal analysis, Data curation, Writing – review & editing, Investigation, Writing – original draft. RA: Conceptualization, Writing – original draft, Writing – review & editing. KE: Writing – review & editing, Conceptualization, Writing – original draft. SC: Writing – original draft, Conceptualization, Writing – review & editing. HG:

Conceptualization, Writing – review & editing, Writing – original draft.

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References

- Anderson, R. M. (2021). Killing for the common good? The (Bio)Politics of wolf management in Washington State. *Elementa* 9, 179. doi: 10.1525/elementa.2020.00179
- Anderson, R. M. (2022). Killing for coexistence: the bio- and necro-political ecology of wolf conservation and management in Washington State. University of Washington, Seattle, Washington.
- Anderson, R. M., Charnley, S., Epstein, K., Gaynor, K. M., Martin, J. V., and McInturff, A. (2023). The socioecology of fear: A critical geographical consideration of human-wolf-livestock conflict. *Can. Geographies / Les géographies canadiennes* 67, 17–34. doi: 10.1111/cag.12808
- Anderson, R. M., Charnley, S., Martin, J. V., and Epstein, K. (2024). Large, rugged and remote: The challenge of wolf-livestock coexistence on federal lands in the American West. *People Nat.* doi: 10.1002/pan3.10713
- Baden, J., and Snow, D. (1997). *The Next West: Public Lands, Community, and Economy in the American West* (Island Press).

- Ban, N. C., Mills, M., Tam, J., Hicks, C. C., Klain, S., Stoeckl, N., et al. (2013). A social-ecological approach to conservation planning: embedding social considerations. *Front. Ecol. Environ.* 11, 194–202. doi: 10.1890/110205
- Bangs, E. E., Fontaine, J. A., Jimenez, M. D., Meier, T. J., Bradley, E. H., Niemeyer, C. C., et al. (2005). "Managing wolf-human conflict in the Northwestern United States," in *People and Wildlife: Conflict or Coexistence?*, Conservation Biology. Eds. A. Rabinowitz, R. Woodroffe and S. Thirgood (Cambridge University Press, Cambridge), 340–356. doi: 10.1017/CBO9780511614774.022
- Bangs, E. E., and Fritts, S. H. (1996). Reintroducing the gray wolf to central Idaho and Yellowstone National Park. *Wildlife Soc. Bull.* 24, 402–413.
- Bangs, E., Jimenez, M., Niemeyer, C., Fontaine, J., Collinge, M., Krsichke, R., et al. (2006). Non-lethal and lethal tools to manage wolf-livestock conflict in the Northwestern United States. *vertebrate_pest_conference* 22, 7–16. doi: 10.5070/V422110170
- Barnes, M. (2015). *Livestock Management for Coexistence with Large Carnivores, Healthy Land and Productive Ranches (White paper)* (Bozeman, Montana: Keystone Conservation).
- Belsky, J. M., and Barton, A. (2018). Constitutionality in Montana: A decade of institution building in the blackfoot community conservation area. *Hum. Ecol.* 46, 79–89. doi: 10.1007/s10745-018-9967-0
- Bernard, H. R. (2017). "Research methods in anthropology: qualitative and quantitative approaches," *Sixth* (Rowman & Littlefield, Lanham, MD).
- Blumhardt, M. (2025). *Wolf advocates, Colorado ranchers agree range riders critical to reducing livestock losses* (Coloradoan).
- Bogezi, C., van Eeden, L. M., Wirsing, A. J., and Marzluff, J. M. (2021). Ranchers' Perspectives on participating in non-lethal wolf-livestock coexistence strategies. *Front. Conserv. Sci.* 2. doi: 10.3389/fcsc.2021.683732
- Bradley, E. H., Robinson, H. S., Bangs, E. E., Kunkel, K., Jimenez, M. D., Gude, J. A., et al. (2015). Effects of wolf removal on livestock depredation recurrence and wolf recovery in Montana, Idaho, and Wyoming. *Jour. Wild. Mgmt.* 79, 1337–1346. doi: 10.1002/jwmg.948
- Bryson, J., and Wyckoff, W. (2010). Rural gentrification and nature in the old and new wests. *J. Cultural Geogr.* 27, 53–75. doi: 10.1080/08873631003593232
- Burnett, G. (2012). "Community-based approach to conservation for the 21st century," in *Conservation & the Environment: Conservative Values, New Solutions*, 14. Available online at: https://blackfootchallenge.org/wp-content/uploads/2020/10/Misc-Publications/Community-based-Approach-to-Conservation-paper-by-Blackfoot-Challenge-for-CLC_1.3.13.pdf.
- Butzer, S. (2024). *Colorado Range Rider program seeks applicants to help keep wolves from livestock* (Denver7).
- Carter, N. H., and Linnell, J. D. C. (2016). Co-adaptation is key to coexisting with large carnivores. *Trends Ecol. Evol.* 31, 575–578. doi: 10.1016/j.tree.2016.05.006
- S. Charnley, T. E. Sheridan and G. P. Nabhan (Eds.) (2014). "Stitching the west back together: conservation of working landscapes," in *Summits: Environmental Science, Law, and Policy* (University of Chicago Press, Chicago).
- S. G. Clark, M. B. Rutherford and D. Casey (Eds.) (2005). *Coexisting with Large Carnivores: Lessons from Greater Yellowstone* (Washington: Island Press).
- Coleman, J. T. (2008). *Vicious: Wolves and Men in America* (New Haven: Yale University Press).
- Collins, M., Owens, B., Breck, S., Burnett, G., Owens, N., Beaver, J., et al. (2024). *Reducing Risk on the Range: Non-lethal Practices for Managing Carnivore-Livestock Conflicts* (Western Landowners Alliance).
- Conservation Northwest (2022). *Washington Wolf Management Is the Best in the West [WWW Document]*. Available online at: <https://conservationnw.org/news-updates/washington-wolf-management-is-the-best-in-the-west/> (Accessed June 07, 2022).
- Davoli, M., Ghoddousi, A., Sabatini, F. M., Fabbri, E., Caniglia, R., and Kuemmerle, T. (2022). Changing patterns of conflict between humans, carnivores and crop-raiding prey as large carnivores recolonize human-dominated landscapes. *Biol. Conserv.* 269, 109553. doi: 10.1016/j.biocon.2022.109553
- Dorresteijn, I., Hanspach, J., Kecskés, A., Latková, H., Mezey, Z., and Sugár, S. (2014). Human-carnivore coexistence in a traditional rural landscape. *Landscape Ecol.* 29, 1145–1155. doi: 10.1007/s10980-014-0048-5
- Drury, R., Homewood, K., and Randall, S. (2011). Less is more: the potential of qualitative approaches in conservation research. *Anim. Conserv.* 14, 18–24. doi: 10.1111/j.1469-1795.2010.00375.x
- Emel, J. (1995). Are you man enough, big and bad enough? Ecofeminism and wolf eradication in the USA. *Environ. Plann. D: Soc. Space* 13, 707–734. doi: 10.1068/d130707
- Epstein, K., and Haggerty, J. H. (2022). Managing wild emotions: wildlife managers as intermediaries at the conflictual boundaries of access relations. *Geoforum* 132, 103–112. doi: 10.1016/j.geoforum.2022.04.004
- Epstein, K., Haggerty, J. H., and Gosnell, H. (2022). With, not for, money: ranch management trajectories of the super-rich in greater yellowstone. *Ann. Am. Assoc. Geographers* 112, 432–448. doi: 10.1080/24694452.2021.1930512
- Farrell, J., Burow, P. B., McConnell, K., Bayham, J., Whyte, K., and Koss, G. (2021). Effects of land dispossession and forced migration on Indigenous peoples in North America. *Science* 374, eabe4943. doi: 10.1126/science.abe4943
- N. Fascione, A. Delach and M. E. Smith (Eds.) (2004). *People and Predators: From Conflict to Coexistence* (Island Press).
- Fiège, M. (1999). *Irrigated Eden: The Making of an Agricultural Landscape in the American West* (University of Washington Press).
- Fischer, H. (1995). *Wolf Wars: The Remarkable Inside Story of the Restoration of Wolves to Yellowstone* (Helena, Montana: Falcon Press).
- Fletcher, R., Massarella, K., Ferraz, K.M.P.M.B., Kiwango, W. A., Komi, S., Mabele, M. B., et al. (2023). The production-protection nexus: how political-economic processes influence prospects for transformative change in human-wildlife interactions. *Global Environ. Change* 82, 102723. doi: 10.1016/j.gloenvcha.2023.102723
- B. Frank, J. A. Glikman and S. Marchini (Eds.) (2019). *Human-Wildlife Interactions: Turning Conflict into Coexistence* (Cambridge University Press).
- Ghose, R. (2004). Big sky or big sprawl? Rural gentrification and the changing cultural landscape of Missoula, Montana. *Urban Geogr.* 25, 528–549. doi: 10.2747/0272-3638.25.6.528
- Gonzalez, M. N., Wilson, S., Nickerson, R., Hyde, M., Purdy, C., Young, J. K., et al. (2024). *Final Report: Assessment Of The Northeast Washington Wolf-Livestock Management Program - 2021–2023 Seasons*.
- Gosnell, H., and Abrams, J. (2011). Amenity migration: diverse conceptualizations of drivers, socioeconomic dimensions, and emerging challenges. *GeoJournal* 76, 303–322. doi: 10.1007/s10708-009-9295-4
- Gosnell, H., Grimm, K., and Goldstein, B. E. (2020). A half century of Holistic Management: what does the evidence reveal? *Agric. Hum. Values* 37, 849–867. doi: 10.1007/s10460-020-10016-w
- Gosnell, H., Haggerty, J. H., and Travis, W. R. (2006). Ranchland ownership change in the greater yellowstone ecosystem 1990–2001: implications for conservation. *Soc. Natural Resour.* 19, 743–758. doi: 10.1080/0894192060080181
- Graves, R. A., Williamson, M. A., Belote, R. T., and Brandt, J. S. (2019). Quantifying the contribution of conservation easements to large-landscape conservation. *Biol. Conserv.* 232, 83–96. doi: 10.1016/j.biocon.2019.01.024
- Grossmann, C. M., and Patkó, L. (2024). Did we achieve what we aimed for? Assessing the outcomes of a human-carnivore conflict mitigation and coexistence project in Europe. *Wildlife Biol.* 2024, e01270. doi: 10.1002/wlb3.01270
- Haller, T., Belsky, J. M., and Rist, S. (2018). The constitutionality approach: conditions, opportunities, and challenges for bottom-up institution building. *Hum. Ecol.* 46, 1–2. doi: 10.1007/s10745-018-9966-1
- Hansen, A. J., Rasker, R., Maxwell, B., Rotella, J. J., Johnson, J. D., Parmenter, A. W., et al. (2002). Ecological causes and consequences of demographic change in the new west. *BioScience* 52, 151. doi: 10.1641/0006-3568(2002)052[0151:ECACOD]2.0.CO;2
- Hartel, T., Scheele, B. C., Vanak, A. T., Rozyłowicz, L., Linnell, J. D. C., and Ritchie, E. G. (2019). Mainstreaming human and large carnivore coexistence through institutional collaboration. *Conserv. Biol.* 33, 1256–1265. doi: 10.1111/cobi.13334
- Hawthorne, D. (2004). The history of federal and cooperative animal damage control. *Sheep Goat Res. J.* Available online at: <https://digitalcommons.unl.edu/icwdmsheepgoat/6>.
- Heberlein, T. A. (2012). *Navigating Environmental Attitudes* (New York: Oxford University Press).
- M. Hechter and K.-D. Opp (Eds.) (2001). *Social Norms | RSF* (New York: Russell Sage Foundation).
- Hesse-Biber, S. N., and Leavy, P. (2007). *The Practice of Qualitative Research*. (London: SAGE).
- Hines, J. D. (2010). Rural gentrification as permanent tourism: the creation of the 'New' West archipelago as postindustrial cultural space. *Environ. Plan D* 28, 509–525. doi: 10.1068/d3309
- Hines, J. D. (2012). The post-industrial regime of production/consumption and the rural gentrification of the new west archipelago. *Antipode* 44, 74–97. doi: 10.1111/j.1467-8330.2011.00843.x
- Huntsinger, L. (2016). "The tragedy of the common narrative: re-telling degradation in the American West," in *The End of Desertification? Disputing Environmental Change in the Drylands*. Eds. R. Behnke and M. Mortimore (Springer), 293–323.
- Idaho Department of Fish and Game (2016). *2015 Idaho Wolf Monitoring Progress Report* (Boise, Idaho: Idaho Department of Fish and Game, 600 South Walnut).
- Ingold, T. (1988). *Hunters, Pastoralists and Ranchers: Reindeer Economies and their Transformations* (Cambridge University Press).
- Jacobs, B., Kareiva, P., and Schachtschneider, C. (2025). *The expanding use and effectiveness of nonlethal methods for mitigating wolf-cattle conflict* (Rangelands). doi: 10.1016/j.rala.2025.02.002
- Kiffner, C., Linnell, J. D. C., Capelli, S., Ciolli, M., Iglesias, A., and Jewell, K. (2025). Comparative stakeholder perceptions of wildlife management in five European multi-use landscapes. *J. Environ. Manage.* 389, 126186. doi: 10.1016/j.jenvman.2025.126186

- Knight, R. L., Gilgert, W., and Marston, E. (2002). *Ranching West of the 100th Meridian: Culture, Ecology, and Economics* (Island Press).
- König, H. J., Kiffner, C., Kramer-Schadt, S., Fürst, C., Keuling, O., and Ford, A. T. (2020). Human-wildlife coexistence in a changing world. *Conserv. Biol.* 34, 786–794. doi: 10.1111/cobi.13513
- Lauer, F. I., Metcalf, Alexander, L., Metcalf, Elizabeth, C., and Mohr, J. J. (2018). Public engagement in social-ecological systems management: an application of social justice theory. *Soc. Natural Resour.* 31, 4–20. doi: 10.1080/08941920.2017.1364456
- Layder, D. (1998). *Sociological Practice* (SAGE Publications Ltd). doi: 10.4135/9781849209946
- Lien, A. M., Dew, T., Ruyle, G. B., Sherman, N. R., Perozzo, N., Miller, M., et al. (2021). Trust is essential to the implementation of adaptive management on public lands. *Rangeland Ecol. Manage.* 77, 46–56. doi: 10.1016/j.rama.2021.03.005
- Louchouart, N. X., and Treves, A. (2023). Low-stress livestock handling protects cattle in a five-predator habitat. *PeerJ* 11, e14788. doi: 10.7717/peerj.14788
- Macon, D., and Whitesell, C. (2021). The case for case studies: A new approach to evaluating the effectiveness of livestock protection tools. *California Fish Wildlife J.* 107, 173–183. doi: 10.51492/cfwj.hwisi.3
- Malcom, J., Schwartz, M. W., Evansen, M., Ripple, W. J., Polasky, S., Gerber, L. R., et al. (2019). Solve the biodiversity crisis with funding. *Science* 365, 1256–1256. doi: 10.1126/science.aay9839
- Mallon, T. (2018). “The modern day range rider,” in *People and Carnivores*. Available online at: <https://peopleandcarnivores.org/blog/modern-day-range-riders>.
- Manfredo, M., Teel, T., and Bright, A. (2003). Why are public values toward wildlife changing? *Hum. Dimensions Wildlife* 8, 287–306. doi: 10.1080/716100425
- Manfredo, M. J., Teel, T. L., Don Carlos, A. W., Sullivan, L., Bright, A. D., Dietsch, A. M., et al. (2020). The changing sociocultural context of wildlife conservation. *Conserv. Biol.* 34, 1549–1559. doi: 10.1111/cobi.13493
- Manfredo, M. J., Teel, T. L., Sullivan, L., and Dietsch, A. M. (2017). Values, trust, and cultural backlash in conservation governance: the case of wildlife management in the United States. *Biol. Conserv.* 214, 303–311. doi: 10.1016/j.biocon.2017.07.032
- Mann, S. (1990). *Agrarian Capitalism in Theory and Practice* (UNC Press Books).
- Mann, S. A., and Dickinson, J. M. (1978). Obstacles to the development of a capitalist agriculture. *J. Peasant Stud.* 5, 466–481. doi: 10.1080/03066157808438058
- Marris, E. (2017). “A good story: Media bias in trophic cascade research in Yellowstone National Park,” in *Effective Conservation Science: Data Not Dogma*. Eds. P. Kareiva, M. Marvier and B. Silliman (Oxford University Press), 80–84.
- Martin, J. V. (2020). *In the Shadow of the Wolf: Wildlife Conflict and Land Use Politics in the New West* (PhD dissertation) (Berkeley, Berkeley, California: University of California).
- Martin, J. V. (2021a). Between scylla and charybdis: environmental governance and illegibility in the American west. *Geoforum* 123, 194–204. doi: 10.1016/j.geoforum.2019.08.015
- Martin, J. V. (2021b). Peace in the valley? Qualitative insights on collaborative coexistence from the wood river wolf project. *Conserv. Sci. Pract.* 3, e197. doi: 10.1111/csp2.197
- Martin, J. V. (2024). Conservation and conviviality in the American West. *Elementa: Sci. Anthropocene* 12, 73. doi: 10.1525/elementa.2023.00073
- Martin, J. V., Anderson, R. M., Epstein, K., and Charnley, S. (2025). *Managing Wolf-Livestock Conflict on National Forests in the Western U.S. (General Technical Report No. PNW-GTR-1029)* (Portland, Oregon: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station).
- Martin, J. V., Epstein, K., Anderson, R. M., and Charnley, S. (2021). Coexistence praxis: the role of resource managers in wolf-livestock interactions on federal lands. *Front. Conserv. Sci.* 2. doi: 10.3389/fcsc.2021.707068
- Martin, J. V., Epstein, K., Bergmann, N., Kroepsch, A. C., Gosnell, H., and Robbins, P. (2019). Revisiting and revitalizing political ecology in the American West. *Geoforum* 107, 227–230. doi: 10.1016/j.geoforum.2019.05.006
- McGregor, A. C. (1989). *Counting Sheep: From Open Range to Agribusiness on the Columbia Plateau* (University of Washington Press).
- McInturff, A., Cannon, C. E. B., Alagona, P. S., and Pellow, D. N. (2021). Meeting at the crossroads: an environmental justice framework for large carnivore reintroductions and recoveries. *Elementa: Sci. Anthropocene* 9, 172. doi: 10.1525/elementa.2020.00172
- Mech, L. D. (2012). Is science in danger of sanctifying the wolf? *Biol. Conserv.* 150, 143–149. doi: 10.1016/j.biocon.2012.03.003
- Merz, L., Bergmann, N. T., Brown, C. L., Martin, J. V., Wardropper, C. B., Bruskotter, J. T., et al. (2025). State-level variation drives wolf management in the northwestern United States. *Environ. Res.: Ecol.* 4, 015008. doi: 10.1088/2752-664X/adafad
- Middleton, A. (2014). Is the wolf a real American hero? *New York Times*. Available online at: <https://www.nytimes.com/2014/03/10/opinion/is-the-wolf-a-real-american-hero.html>.
- Montana Fish, Wildlife and Parks (2015). *Montana Gray Wolf Distribution*.
- Montana Fish, Wildlife, and Parks (2025). *Montana Gray Wolf Conservation and Management Plan (No. FWP-PLAN-WLD-R8-2024-003)* (Montana Fish, Wildlife, and Parks).
- Montana Livestock Loss Board. (2025) *Livestock Loss Board* (Montana.Gov). Available online at: <https://liv.mt.gov/Attached-Agency-Boards/Livestock-Loss-Board/index>.
- Montana Livestock Loss Board (2023). *Livestock Loss Board Grant Application* (Loss Prevention Grant Program). Available online at: https://liv.mt.gov/_docs/LLB/Forms/LLB-Grant-Application-2023.pdf.
- National Fish and Wildlife Foundation. *America the Beautiful Challenge*. Available online at: <https://www.nfwf.org/programs/america-beautiful-challenge> (Accessed November 28, 2023).
- National Fish and Wildlife Foundation (2023). *America the Beautiful Challenge 2023 Grant Slate* (Washington, D.C: National Fish and Wildlife Foundation).
- Netz, R. (2004). *Barbed Wire: An Ecology of Modernity* (Wesleyan University Press).
- Nickerson, R., Collins, M., Owens, B., Shepherd, J., Owens, N., Nunlist, E., et al. (2024). *Range Riding Producer Tool Kit* (Western Landowners Alliance).
- Nie, M. A. (2003). *Beyond Wolves: The Politics of Wolf Recovery and Management* (Minneapolis: University of Minnesota Press).
- Nyhus, P. J. (2016). Human-wildlife conflict and coexistence. *Annu. Rev. Environ. Resour.* 41, 143–171. doi: 10.1146/annurev-environ-110615-085634
- O'Connor, B. (2024). *Conservation Innovation Grant Helps Landowners Reduce Conflicts between Predators, Working Lands | Natural Resources Conservation Service* (Natural Resources Conservation Service). Available online at: <https://www.nrcs.usda.gov/programs-initiatives/cig-conservation-innovation-grants/news/conservation-innovation-grant-helps>.
- Ostermann-Miyashita, E., Kirkland, H., Eklund, A., Hare, D., Jansman, H. A. H., and Kiffner, C. (2025). Bridging the gap between science, policy and stakeholders: Towards sustainable wolf-livestock coexistence in human-dominated landscapes. *People Nat.* 10786. doi: 10.1002/pan3.10786
- Parks, M., and Messmer, T. (2016). Participant perceptions of Range Rider Programs operating to mitigate wolf-livestock conflicts in the western United States: Nonlethal Wolf Depredation Management. *Wildl. Soc. Bull.* 40, 514–524. doi: 10.1002/WSB.671
- Patterson, M., and Williams, D. (2002). Collecting and analyzing qualitative data: hermeneutic principles, methods and case examples. *Sagamore*, 127. Available online at: https://www.fs.usda.gov/rm/pubs_other/rmrs_2002_patterson_m001.pdf.
- Patton, M. Q. (2014). *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*. 4th ed. (Saint Paul, MN: SAGE Publications, Inc.).
- Peck, C. P., van Manen, F. T., Costello, C. M., Haroldson, M. A., Landenburger, L. A., Roberts, L. L., et al. (2017). Potential paths for male-mediated gene flow to and from an isolated grizzly bear population. *Ecosphere* 8, e01969. doi: 10.1002/ecs2.1969
- Perritt, H. (2019). Rise and fall of the cowboy: technology, law, and creative destruction in the industrialization of the food industry. *N.D. L. Rev.* 94, 361–428. Available online at: <https://heinonline.org/HOL/P?h=hein.journals/nordak94&i=373>.
- Ravenelle, J., and Nyhus, P. J. (2017). Global patterns and trends in human-wildlife conflict compensation. *Conserv. Biol.* 31, 1247–1256. doi: 10.1111/cobi.12948
- Reid, R. S., Fernández-Giménez, M. E., and Galvin, K. A. (2014). Dynamics and resilience of rangelands and pastoral peoples around the globe. *Annu. Rev. Environ. Resour.* 39, 217–242. doi: 10.1146/annurev-environ-020713-163329
- W. E. Riebsame and J. J. Robb (Eds.) (1997). *Atlas of the New West: Portrait of a Changing Region*. 1st (New York: WW Norton & Co Inc).
- Ripple, W. J., and Beschta, R. L. (2004). Wolves and the ecology of fear: can predation risk structure ecosystems? *BioScience* 54, 755–766. doi: 10.1641/0006-3568(2004)054[0755:WATEOF]2.0.CO;2
- Ripple, W. J., and Beschta, R. L. (2005). Linking wolves and plants: aldo leopold on trophic cascades. *BioScience* 55, 613–621. doi: 10.1641/0006-3568(2005)055[0613:LWAPAL]2.0.CO;2
- Ripple, W. J., and Beschta, R. L. (2012). Trophic cascades in Yellowstone: The first 15 years after wolf reintroduction. *Biol. Conserv.* 145, 205–213. doi: 10.1016/j.biocon.2011.11.005
- Robbins, W. G. (1994). *Colony and Empire: The Capitalist Transformation of the American West* (University Press of Kansas).
- Robbins, P., Meehan, K., Gosnell, H., and Gilbert, S. J. (2009). Writing the new west: A critical review. *Rural Sociology* 74, 356–382. doi: 10.1526/003601109789037240
- Robson, C., and McCartan, K. (2016). *Real World Research* (Chichester: Wiley).
- Rosenzweig, M. L. (2003). *Win-Win Ecology: How the Earth's Species Can Survive in the Midst of Human Enterprise* (Oxford University Press).
- Rowley, W. D. (1985). *U.S. Forest Service Grazing and Rangelands: A History* (Texas A&M University Press).
- Rutherford, S. (2022). *Villain, Vermin, Icon, Kin: Wolves and the Making of Canada* (McGill-Queen's University Press).
- Sayre, N. (1999). The cattle boom in southern arizona: towards a critical political ecology. *J. Southwest* 41, 239–271. Available online at: <http://www.jstor.org/stable/40170135>.
- Sayre, N. F. (2015). The Coyote-Proof Pasture Experiment: How fences replaced predators and labor on US rangelands. *Prog. Phys. Geography: Earth Environ.* 39, 576–593. doi: 10.1177/0309133314567582

- Sayre, N. F. (2017). *The Politics of Scale: A History of Rangeland Science* (University of Chicago Press).
- Sells, S. N., Costello, C. M., Lukacs, P. M., Roberts, L. L., and Vinks, M. A. (2023). Predicted connectivity pathways between grizzly bear ecosystems in Western Montana. *Biol. Conserv.* 284, 110199. doi: 10.1016/j.biocon.2023.110199
- Sheridan, T. E. (2001). Cows, condos, and the contested commons: the political ecology of ranching on the arizona-sonora borderlands. *Hum. Organ.* 60, 141–152. doi: 10.17730/humo.60.2.991hqu9q6ryf5aav
- Sheridan, T. E. (2007). Embattled ranchers, endangered species, and urban sprawl: the political ecology of the new American West. *Annu. Rev. Anthropology* 36, 121–138. doi: 10.1146/annurev.anthro.36.081406.094413
- Sime, C. A., Bangs, E., Bradley, E., Steuber, J. E., Glazier, K., Hoover, P. J., et al. (2007). Gray wolves and livestock in Montana: A recent history of damage management. In *The Twelfth Wildlife Damage Management Conference*, D. L. Nolte, W. M. Arjo and D. Stalman (eds.), 16–35. (Corpus Christi, TX: National Wildlife Research Center).
- Small, M. L. (2009). 'How many cases do I need?': On science and the logic of case selection in field-based research. *Ethnography* 10, 5–38. doi: 10.1177/1466138108099586
- Smith, A. P., Metcalf, A. L., Metcalf, E. C., Yung, L., Swinger, B., Cummins, T. M., et al. (2024). U.S. beef producer perspectives on "sustainable beef" and implications for sustainability transitions. *Discov. Sustain* 5, 91. doi: 10.1007/s43621-024-00253-y
- Smith, D. W., Peterson, R. O., and Houston, D. B. (2003). Yellowstone after wolves. *BioScience* 53, 330–340. doi: 10.1641/0006-3568(2003)053[0330:YAW]2.0.CO;2
- Smith, A. P., Sundstrom, A., and Burnham, M. (2025). Understanding diverse perspectives on grizzly-livestock conflict and conflict-reduction tools across southwest Montana ranching communities. *J. Wildlife Manage.* 89, e22709. doi: 10.1002/jwmg.22709
- Soulé, M., and Noss, R. (1998). Rewilding and biodiversity: complementary goals for continental conservation. *Wild Earth* 8, 18–28. Available online at: <http://www.environmentandsociety.org/node/6088>.
- Starrs, P. F. (2000). *Let the Cowboy Ride: Cattle Ranching in the American West* (JHU Press).
- Steele, J. R., Rashford, B. S., Foulke, T. K., Tanaka, J. A., and Taylor, D. T. (2013). Wolf (*Canis lupus*) predation impacts on livestock production: direct effects, indirect effects, and implications for compensation ratios. *Rangeland Ecol. Manage.* 66, 539–544. doi: 10.2111/REM-D-13-00031.1
- Stegner, W. (1992). *Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West* (Penguin).
- Stern, M. J., and Coleman, K. J. (2015). The multidimensionality of trust: applications in collaborative natural resource management. *Soc. Natural Resour.* 28, 117–132. doi: 10.1080/08941920.2014.945062
- Stone, S. A., Breck, S. W., Timberlake, J., Haswell, P. M., Najera, F., Bean, B. S., et al. (2017). Adaptive use of nonlethal strategies for minimizing wolf-sheep conflict in Idaho. *J. Mammalogy* 98, 33–44. doi: 10.1093/jmammal/gyw188
- Stone, S. A., Edge, E., Fascione, N., Miller, C., and Weaver, C. (2016). *Livestock and Wolves: A Guide to Nonlethal Tools and Methods to Reduce Conflicts*. 2nd ed. (Washington, D.C: Defenders of Wildlife).
- Strauss, A., and Corbin, J. M. (1990). *Basics of qualitative research: Grounded theory procedures and techniques, Basics of qualitative research: Grounded theory procedures and techniques* (Thousand Oaks, CA, US: Sage Publications, Inc).
- Swette, B., Huntsinger, L., and Lambin, E. F. (2023). Collaboration in a polarized context: lessons from public forest governance in the american west. *Ecol. Soc.* 28, 29. doi: 10.5751/ES-13958-280129
- Thompson, J. (2023). *Wyoming People: Brittany Heseltine Is A Real Working Cowgirl And Range Rider* (Cowboy State Daily).
- USDA Animal and Plant Health Inspection Service (2022). *USDA APHIS Wildlife Services Nonlethal Initiative for Livestock Protection: FY 2021 Annual Accomplishments Report*.
- U.S. Department of Agriculture (2025). *Wildlife Services' Nonlethal Initiative* (Animal and Plant Health Inspection Service). Available online at: <https://www.aphis.usda.gov/wildlife-services/about/nonlethal/storymap>.
- U.S. Department of Agriculture (2021). *Conservation Innovation to Reduce Predator Conflicts on Working Lands (Research Summary)* (Natural Resources Conservation Service).
- U.S. Department of Agriculture (2023a). *Regional Conservation Partnership Program 2023 Awarded Projects* (atural Resources Conservation Service). Available online at: <https://www.nrcs.usda.gov/programs-initiatives/rcpp-regional-conservation-partnership-program/regional-conservation>.
- U.S. Department of Agriculture (2023b). *Montana Projects Receive \$42 Million as Part of Unprecedented \$1 Billion Investment in USDA Regional Conservation Partnership Program* (Natural Resources Conservation Service). Available online at: <https://www.nrcs.usda.gov/news/montana-projects-receive-42-million-as-part-of-unprecedented-1-billion-investment-in-usda>.
- U.S. Fish & Wildlife Service *Wolf Livestock Loss Demonstration Project Grant Program*. Available online at: <https://www.fws.gov/service/wolf-livestock-loss-demonstration-project-grant-program> (Accessed April 04, 2024).
- U.S. Fish and Wildlife Service (2022). *Grizzly Bear Recovery Program – 2022 Annual Report* (Missoula, Montana, USA: Grizzly Bear Recovery Program).
- U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, Nez Perce Tribe, Montana Fish, Wildlife & Parks, and Wyoming Game and Fish Department, et al. (2014). *Northern Rocky Mountain Wolf Recovery Program 2013 Interagency Annual Report* (585 Shepard Way, Helena, Montana, 59601: USFWS, Ecological Services).
- van Eeden, L. M., Dickman, C. R., Ritchie, E. G., and Newsome, T. M. (2017). Shifting public values and what they mean for increasing democracy in wildlife management decisions. *Biodivers Conserv.* 26, 2759–2763. doi: 10.1007/s10531-017-1378-9
- van Eeden, L. M., Martin, J. V., Fisk, J., Lehnen, L., Ellis, E. C., Gavin, M., et al. (2025). In review. Species belonging as a cultural paradigm in conservation. *Biol. Conserv.* 311, 111415. doi: 10.1016/j.biocon.2025.111415
- Van Hauen, M. S. (2024). *Colorado Department of Agriculture to provide \$20,000 for range riders in Grand County* (Sky-Hi News).
- Walker, P., and Fortmann, L. (2003). Whose landscape? *A Political Ecol. 'Exurban' Sierra. cultural geographies* 10, 469–491. doi: 10.1191/1474474003eu2850a
- Wentworth, E. N. (1948). *America's Sheep Trails: History, Personalities* (Iowa State College Press).
- Wilkinson, T. (2012). *New breed of ranchers shapes a sustainable West* (Christian Science Monitor).
- Wilkinson, C. E., McInturff, A., Miller, J. R. B., Yovovich, V., Gaynor, K. M., Calhoun, K., et al. (2020). An ecological framework for contextualizing carnivore-livestock conflict. *Conserv. Biol.* 34, 854–867. doi: 10.1111/cobi.13469
- Wilson, S. M., Bradley, E. H., and Neudecker, G. A. (2017). Learning to live with wolves: community-based conservation in the blackfoot valley of montana. *Hum. Wildlife Interact.* 11, 245–256. doi: 10.26077/50EF-E990
- Winkler, R., Field, D. R., Luloff, A. E., Krannich, R. S., and Williams, T. (2007). Social landscapes of the inter-mountain west: A comparison of 'Old west' and 'New west' Communities. *Rural Sociology* 72, 478–501. doi: 10.1526/003601107781799281
- Wise, M. D. (2016). *Producing Predators: Wolves, Work, and Conquest in the Northern Rockies* (University of Nebraska Press).
- Wolfe, P. (2006). Settler colonialism and the elimination of the native. *J. Genocide Res.* 8, 387–409. doi: 10.1080/14623520601056240
- Woodall, P., and Shannon, T. L. (2018). Monopoly power corrodes choice and resiliency in the food system. *Antitrust Bull.* 63, 198–221. doi: 10.1177/0003603X18770063
- Woodroffe, R., Thirgood, S., and Rabinowitz, A. (2005). *People and Wildlife: Conflict or Coexistence?* (Cambridge University Press).
- Wyoming Game and Fish Department, U.S. Fish and Wildlife Service, National Park Service, USDA APHIS Wildlife Services and Eastern Shoshone and Northern Arapahoe Tribal Fish and Game Department (2023). *Wyoming Gray Wolf Monitoring and Management: 2022 Annual Report* (Cheyenne, Wyoming: Wyoming Game and Fish Department).
- Zabel, A., and Holm-Müller, K. (2008). Conservation performance payments for carnivore conservation in Sweden. *Conserv. Biol.* 22, 247–251. doi: 10.1111/j.1523-1739.2008.00898.x