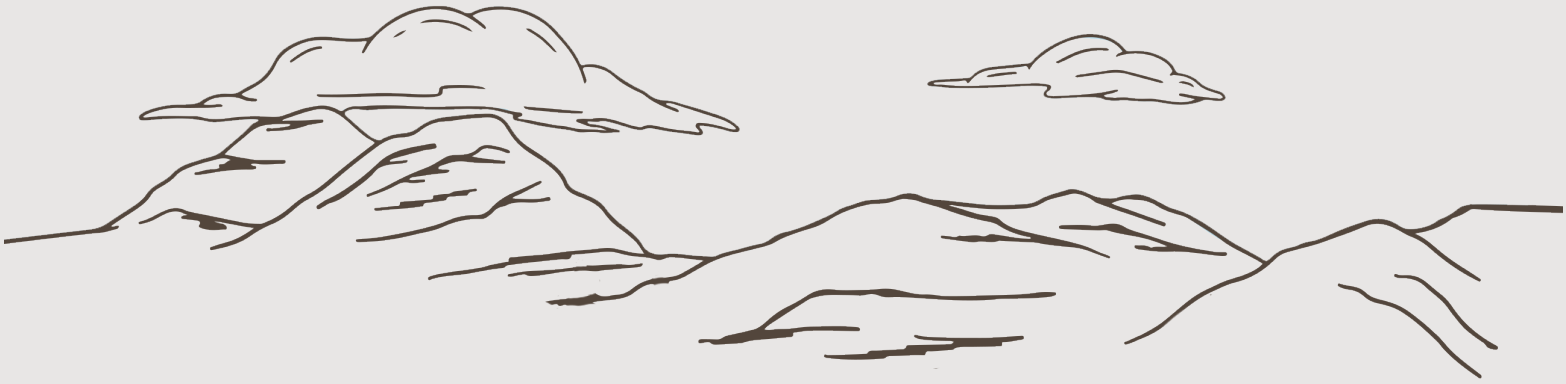


RANGE RIDING

PRODUCER TOOL KIT

COW CIG

2021-2024

RANGE RIDING
PRODUCER TOOL KIT

Photo by: Melanie Elzinga

Range riding is a long-used and flexible practice, making it a beneficial conflict reduction tool for use in diverse, ever-changing western landscapes. The overarching goal of range riding for predator conflict reduction is to monitor livestock and predator interactions and activity in order to plan and respond in a timely manner to minimize conflicts and mitigate the impacts of conflict. Given the context of each operation and landscape, range riding can vary from serving a specific role to a broader application, and may include the following activities:

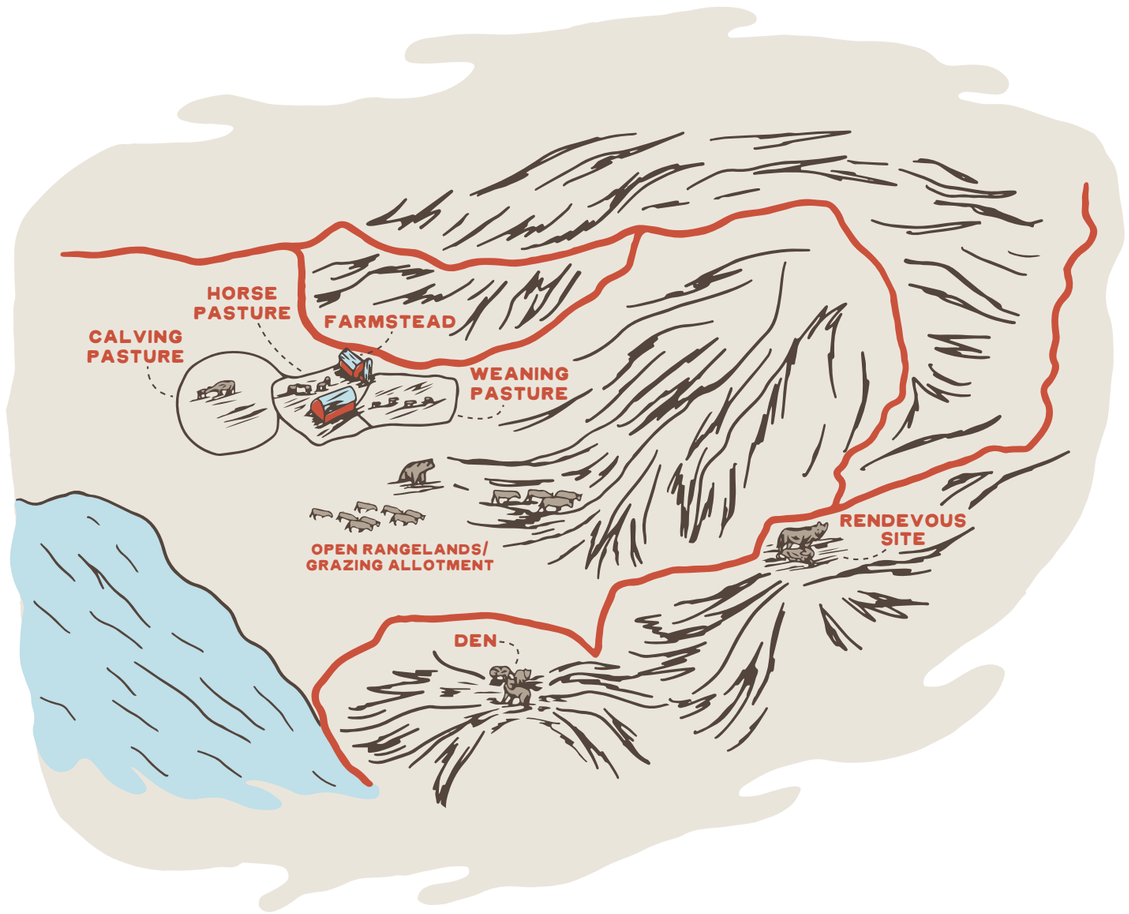
- Monitoring predator and/or prey species activity, and applying prevention/deterrents appropriately
- Deterring predators actively or passively
- Monitoring livestock health and behavior
- Optimizing forage use and enhancing range and riparian habitat condition through the implementation of a grazing management plan
- Managing livestock to increase resilience to predation (e.g., grouping/herding)

Range riding is applied within an adaptive management structure of risk assessment, planning, implementation, and ongoing evaluation. The rider may work to monitor livestock and/or carnivore activity through regular direct observation of animal behavior, track and sign, or other landscape cues. Remote monitoring is also possible through the use of camera traps or other technology (i.e., drones, virtual fencing).. These efforts, combined with ongoing communication between riders, wildlife and resource management agency staff, cowboys/herders, and local livestock owners can provide a more accurate and complete understanding of the evolving risk of conflict. This allows for the identification of problems and best actions to manage each evolving situation. Identified solutions may include intensified range riding in problem locations, deployment of additional predator deterrents or conflict prevention methods, and adjusted pasture rotation. Range riders can also provide detection and reporting of predation events (injuries or mortalities) to the ranch manager or owner, or the appropriate wildlife management agency. While this guide is specific to the application of range riding for predation risk management, the practice can be applied to meet a wide variety of livestock production and natural resource stewardship objectives.

Range riding can be performed by owners or staff of livestock operations, through contractors with community-based organizations such as landowner-led conservation groups and other NGOs, or by state and federal wildlife management agency staff. Although we use the title “range rider” throughout this toolkit, cowboys, herders, ranch hands, other livestock managers, and even non-livestock managing employees can, and may already be acting as range riders.

This toolkit includes a step-by-step process to support the planning, implementation, and adaptive management of range riding programs/activities. We also provide case studies that highlight lessons learned by ranches and place-based organizations as examples. Drawing from three years of shared learning with landowners, livestock producers, wildlife biologists, partner organizations, researchers, tribes, and federal and state agencies, the toolkit represents decades of knowledge and lived experience across the West.

RANGE RIDING



PRINCIPLES FOR PREDATION RISK MANAGEMENT

A diverse group of stakeholders, guided by the direct experience of livestock producers, across seven states in the American West contributed to the development of Principles for Predation Risk Management. As a general guide, the following steps can be used to inform decision-making when working to reduce wildlife-livestock conflicts and manage connected, highly functional landscapes:

1. Know your context

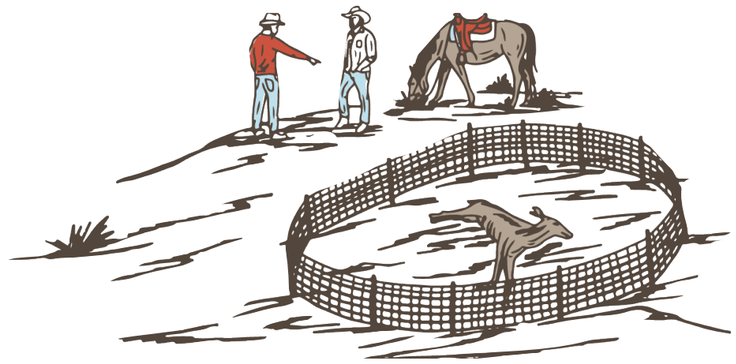
2. Identify your goals and objectives

3. Context-specific application

4. Communicate for success

5. Integrate emerging strategies and complementary technology

6. Continue to assess risk, evaluate outcomes and adapt activities



STEP 1: Know your context

What types of large carnivores are present on your landscape? What areas do they frequent and when? What kind of livestock do you run, and when are they the most vulnerable to predation? What are the natural prey of the large carnivores, and how do they use the landscape? Are there areas of your operation that are more human dominated compared to others (i.e., farmstead vs. large pastures, allotments)? Thinking through some of these questions and the prompts in the Risk Assessment Framework below will help you understand your operation's predation risk and work toward solutions that are realistic for your operation. To learn more about how to follow this framework, please follow the QR code on the back page of this document.

The Risk Assessment Framework

1. SPECIES: Type and population density of predators and type and age class of livestock can alter the level of risk, as may the abundance, landscape use, and diversity of non-livestock prey.

2. PLACE: Each site and region has a unique set of abiotic and biotic conditions that influence forage and livestock production, how wildlife (including predators) use the landscape, and the way wild and domestic species interact (e.g., forage quality and quantity, topography, canopy cover/density, water and availability, climate).

3. TIME: Conflict and predation risk exists in a temporal setting and can change over time based on habitat use and livestock/grazing management, which can be influenced by the time of day, season of use, and annual life cycles of wildlife and annual production cycles of livestock.

4. DISTURBANCE: Predation risk is influenced by events that may strongly influence wildlife population numbers, behavior, and habitat dynamics, along with livestock and forage production and availability (e.g., snow, drought, fire, recreation, lethal control).

5. LANDSCAPE/LAND USE: The size, shape, and spatial relationships of habitat patches, home ranges, and livestock pastures on a ranch, lease, or region can affect ecosystem function, community dynamics and predation risk, along with the ability to implement certain strategies (e.g., road access not only for livestock and predators, but also for the operators).

STEP 2: Identify your goals and objectives

Range riding can have a wide range of applications, with the primary application outlined in this document being reducing the risk of interaction between livestock and predators, thereby reducing livestock death, injury, and stress-induced production losses. For these reasons, range riding is best applied through an adaptive management structure that involves observation, evaluation, and management. It is important to set goals for each stage of this adaptive management process to guide when and where a range rider can observe both livestock and carnivore movement through visual cues and/or game cameras, work with livestock owners and other staff to identify best-fit actions, and set expectations for management through applying additional predator deterrents, adjusted pasture rotation, or reporting depredation events (injuries and mortalities) to the appropriate wildlife management agency.

STEP 3: Context-specific application

Determining an effective strategy for range riding includes assessment of local conditions, vegetation, topography, predator presence, and livestock management goals. The application of range riding can vary greatly depending on these factors, leading to differences in riding techniques, intensity, transportation methods, and focus areas. Here we provide a breakdown of key considerations and strategies for range riding application:

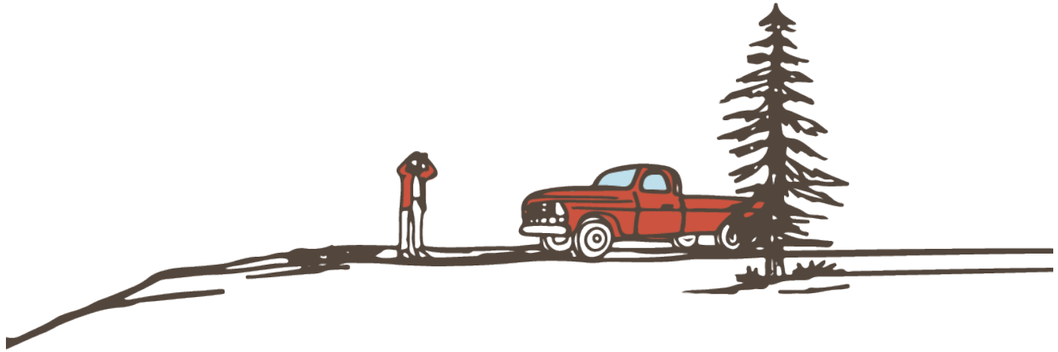
Context is key: Different regions will have unique landscapes and ecological dynamics impacting the strategies employed by range riders. Working off of the risk assessment framework, factors such as vegetation type, terrain ruggedness and predator populations will influence riding techniques and priorities.

Conflict evaluation: Determining the level of existing and potential predator conflict is key. Signs of low to no conflict may include calm herds with cows and calves paired, cows evenly spread out across the pastures to graze, herds using high quality and/or quantity forage areas, livestock spending the majority of their time with their heads down grazing, little to no predator sign in the area, and/or little to no reaction from livestock to herding dogs, although these signs will be unique to each herd. When conflict risk is low, a producer may prioritize using riders to optimize forage use and range conditions for the best possible gains, herd health, and range resilience/future productivity rather than monitoring and managing predators. Early detection of potential conflict signs, such as stress in the herd or increased predator activity, allows for timely intervention and/or reporting for compensation. When detected, conflicts can be addressed using non-lethal or lethal methods on predators depending on the regulatory context and severity of conflict. For example, riders focused on preventing new conflicts may prioritize monitoring predator activity while also managing herd health and forage use, whereas a rider working to address existing conflict may focus on predator hazing, providing herd presence during prime conflict hours, and/or searching for depredations.

"Riding the predator", and/or "riding the livestock": The type and age class of livestock, as well as the specific goals of the producer, will shape the focus of range riding efforts. Some producers may prioritize "riding the predator' ie. focusing on predator monitoring and deterrence while others may focus more on "riding the livestock" ie. focusing on livestock health and grazing rotation to increase herd resilience to predation. While the focus of one rider may shift between predator and livestock management, integrating both approaches is often most effective. This integration requires understanding both predator and cattle behavior, adapting riding strategies accordingly, and regular communication between producers and riders.

Variation in riding strategies: Range riding strategies can include variations in timing (time of day, days per week, hours per day), mode of travel (horse, ATV, foot), and use of monitoring and management tools (remote cameras, track and sign identification, herding techniques). The choice of transportation, whether horseback, on foot, or using vehicles, depends on factors like pasture scale, accessibility and operational preferences.

Tools for conflict monitoring: Game cameras and track/scat identification can be especially effective tools for identifying increasing risk by providing information on predators and livestock. Game cameras can be placed in predator travel corridors like roads or game trails, fence lines, water sources, edge habitat (like tree lines), previous locations where predators were observed, or around carcasses and/or areas of previous conflict. Cameras can also be placed in areas of high use by livestock to monitor stress, use, and activity. Tracking skills can help identify how recently predators have been in the area, whether scats contain livestock hair, whether livestock were killed or scavenged by predators, or whether livestock have been chased. It's important to note that the unique behavior of the individual predators may also influence responsiveness to riding efforts. Getting to know your predators through regular monitoring and observation of predator response to rider activity may make riding more effective.



STEP 4. Communicate for success

Whether on single or multiple neighboring operations, range riding can build coordination, communication, and trust between producers, employees, and agencies. Range riders often coordinate across operations and with agencies to share information regarding general carnivore locations, depredations and active conflicts, and information relevant to support landscape health and stewardship. In situations where trust has broken down amongst agencies and producers, a range rider may play an important intermediary role, potentially restarting dialogue and reducing barriers to communication. Riders should communicate regularly with the producer and/or the rider manager who coordinates with the producer(s) and keep good records of their activities.

At the local level, place-based collaborative groups can play a crucial role in coordinating range riding across communities. These groups engage with landowners through workshops and one-on-one meetings, and support mutual learning about conflict prevention efforts and techniques. These groups also offer technical assistance and cost-sharing programs to help alleviate the financial burden associated with implementing and maintaining range riders, which can be especially important considering the time it can take for a rider to learn the area, learn herd activity and behavior including signs of stress, and develop effective practices. Furthermore, place-based collaborative groups provide a structured platform for building trust and cooperation with state and federal agencies, as well as nonprofit organizations, who can offer additional technical and financial support for conflict prevention efforts

STEP 5. Trial emerging strategies and complementary technology

There are ample opportunities to combine emerging technologies and management practices with range riding. Technology like virtual fencing, drones, and game cameras with artificial intelligence and communication capabilities can provide remote monitoring. VHF and accelerometers provide information on herd health, location, and activity, and mechanized mineral bins can be used to aggregate livestock, all potentially improving the effectiveness of range riding.

STEP 6. Adapt activities based on changing risks and opportunities

Risk management is an ongoing process that requires adaptation to changing conditions in order to remain effective. Planning and implementation, followed by evaluation of outcomes and ongoing assessment of risk, will support effective riding protocols and activities. Part of the value of range riding is being able to regularly assess and adaptively respond to risk as it changes over space and time. This can look like daily, weekly, seasonal or annual changes in rider behavior, but will always depend on the unique situation on each ranch. Good note-taking, communication, and regular monitoring will all support effective adaptation leading to effective conflict mitigation strategies.

Examples of real-time adaptation from a rider may include changing the intensity or frequency of range riding, changing the timing and/or location of preventative tools and deterrents, or changing the focus of depredation detection and hazing (see step 3 for details). Adaptive shifts may come from changes in predator behavior or livestock activity, from changing range conditions, or added disturbances that change access or operational goals. Range riding is a flexible tool uniquely suitable to the flexible needs of livestock production on range.


Photo by: Jay Shepherd

PROTECTING LIVESTOCK WITH RANGE RIDING

Northeastern Washington

In order to match a growing need for wolf-livestock conflict prevention, the Northeast Washington Wolf Cattle Collaborative (NEWWCC) was formed with the goal of working with livestock producers to expand a range riding program. They aimed to create a program that allowed for more flexibility in funding and operation than the previous state-run program, and most importantly, that was more acceptable to producers.

Forming strong relationships among program managers and livestock producers and working alongside producers to hire trusted range riders has been key to the success and expansion of the program. Though, as the interest for NEWWCC's range riding program has grown, finding enough range riders and resources to serve all those who are interested has been a challenge. "I can't really help everybody that wants help," said Jay Shepherd, the program director. Because of this, the program uses risk assessments that evaluate areas where there are both high cattle and moderate to high wolf densities to determine priority areas and producers to work with.

In 2022, the program funded 26 range riders who filled full-time and part-time contracts that covered close to 200,000 acres of National Forest land. These range riders supported 10 producers in meeting the conflict prevention goals outlined in Washington Department of Fish and Wildlife's Wolf-Livestock Interaction Protocol. Each range rider costs approximately $150/day. The organization also pays for horses to be used at $40/day as well as trucks with horse trailers that cost $60/day. For a portion of the season, they also utilize ATVs ($40/day) to monitor livestock and place cameras. Operating at its current size, it requires between $250,000 and $300,000 per field season to run the program.

The program receives the majority of its funding from the Northeast Washington Wolf-Livestock Account which was established within the Washington Department of Agriculture in 2017 to provide opportunity for place-based organizations to support wolf-livestock conflict prevention work in four counties located in the northeastern portion of the state (RCW 16.76.020). Given the requirements for Washington producers to participate in nonlethal conflict prevention measures before being eligible to use lethal methods, this state-allotted funding has become vital for livestock operations in the remote areas of Northeastern Washington.

Place-based organizations like the Northeast Washington Wolf Cattle Collaborative, are essential for carrying out range-riding programs, especially as many producers don't trust state agencies to "protect their cattle and to recover wolves at the same time," Shepherd explains. He also stresses the fact that, while ranchers care deeply about this issue, it is difficult for them, due to haying or irrigating, to be present on the range during busy summer months to the extent that a range rider can. "It's not just checking on the cattle once a week; it's a significant effort," he details. "That's not going to occur, I don't think, when (ranchers) are that busy." Thus, these programs not only provide a more trusted source for conflict prevention, but also help ranchers to achieve the goals that they wouldn't otherwise be able to meet on their own due to lack of time and the added financial burden.

RANGE RIDING IN THE CENTENNIAL VALLEY, MT:

A Case Study of Employing the Principles of Predation Risk Management

The Centennial Valley Association (CVA) was established in the early 2000s when a group of community members and landowners recognized the need for local collaboration on issues of concern to the community. The mission of the CVA is to preserve traditional ranching as a way of life in Montana's Centennial Valley, while maintaining open space, wildlife habitat, water quality, and migration corridors for future generations.

An early program established by the CVA was range riding. Producers noticed an increase in unconfirmed livestock losses at the end of the grazing season, and they didn't know what was happening: was it grizzly bears, poisonous plants, or theft? During this same period of time, wolves and grizzly bears were expanding into the Centennial Valley from Yellowstone National Park.

Range rider and wildlife coordinator with the CVA, Erika Nunlist, explains "Landowners and producers got together and determined that range riding was a good way to have more eyes on the landscape to monitor livestock and predator activity. Producers aren't able to be out on the large rangelands every day due to other ranch and family responsibilities, so having the support of people who are specifically dedicated to range riding was really important." Producers also monitor their range and appreciate the extra support to reduce potential conflict.

1. Know your context and objectives

The Centennial Valley in southwest Montana is one of the last remaining intact and relatively undeveloped landscapes of the West where many species of iconic wildlife such as grizzly bears, wolves, moose, elk, trumpeter swans, Arctic grayling, and the Greater sage-grouse call home. Covering 450,000 acres, the Centennial Valley is a critical wildlife corridor, linking the Greater Yellowstone to the Salmon-Selway Wilderness and Crown of the Continent. Within the Centennial Valley, the Red Rock Lakes National Wildlife Refuge, encompassing over 53,000 acres, is the largest wetland complex in the Greater Yellowstone Ecosystem. The Centennial Valley includes a variety of native habitats on the landscape including Montane sagebrush steppe, wetlands, and grasslands, and at 7,000 feet in elevation, the valley is only grazed from June-October. "It's a very wild and intact landscape. 75% of the landscape is protected from development through public lands and conservation easements on private land. It's a very cool conservation story that would not have been possible without the involvement of key, multi-generational ranches" Nunlist explains.

2. Identify your goals

The goals of the range rider program at the CVA are to reduce the number of unconfirmed losses and depredations through monitoring predator activity and identifying risk factors to livestock that could increase the chance of a depredation event. This is achieved through the presence of range riders who are specifically dedicated to monitoring livestock and wildlife activity.


Photo by: Erika Nunlist

3. Context-specific application

The CVA range riders saddle a horse first thing in the morning so that each rider will have time to ride through two of the seven to nine herds each a day. They look at cattle health and behavior, mineral availability, fencing, water conditions, presence of larkspur, carcasses, signs of depredation events, and more, then report anything of concern to producers and other area stakeholders to increase community safety and awareness. All of the factors above can make livestock more susceptible to depredation events. Range riders provide proactive observations that identify potential issues that are then relayed to the producer or community member to reduce livestock susceptibility to predators and future depredation events, as well as improve human safety. Range riders carry portable electrified mesh fence to place around a carcass if one is discovered in order to preserve the carcass until Wildlife Services can confirm a depredation event.

4. Communicate for success

"The Centennial Valley Association would not exist without partnerships – partnerships were the foundation of the CVA to begin with. All of the different stakeholders came to the table to find common ground and solutions" Nunlist says proudly. Key partners include landowners and ranchers, the Red Rock Lakes National Wildlife Refuge, state agencies, BLM, and The Nature Conservancy. These partners are key to the success of the program as participants, a source of funding, informational and data resources, and support for housing and horse boarding. Communication is a critical component of a range rider's job; the goal is for riders to be disseminators of information regarding wildlife and livestock conflicts. Nunlist writes bi-weekly reports that include photos from game cameras and shares information regarding where there may be increased risk of depredation. For example, when images of bears are shared, this information informs the community of increased potential risks of grizzlies to humans and livestock.

5. Integrate emerging strategies and complementary technologies

The use of game cameras supports the CVA's goals by helping range riders " take the pulse" of the predator population and activity on the landscape. The program strives to interpret the landscape and how wildlife are using it. Game cameras are placed around carcasses. "It helps people understand what is going on in their pastures. It goes back to the goal of keeping stakeholders informed and doing what we can to understand our landscape" Nunlist says.

Another important use of technology that supports range riding is digital mapping. Map apps can be downloaded to use on phones through Avenza and onX and can include important information including pasture boundaries, water sources, and landmark names. OnX can be used to track riding and share locations. Nunlist emphasized "Having good mapping software and getting range riders comfortable with the technology is huge; it saves so much time and helps to understand the landscape. The reference maps that we create are invaluable." As for the use of developing technology including species-recognition game cameras or drones for monitoring and surveillance, Nunlist said that there is no budget to evaluate them, but she is hopeful that once the technology is more widely available and grant funding can cover the purchase, it will be incorporated into the CVA range riding program.

6. Continue to assess risk, evaluate outcomes and adapt activities

Adapting to different stressors is a critical part of a range rider's job. For example, toxic plants often grow in desirable pastures but are only easily identifiable or available for a short period. Attention must be paid to pasture quality and hazards like toxic forbs. Due to the toxicity of larkspur, ingesting it is usually fatal. Livestock carcasses on the landscape can attract large carnivores, increasing the risk of a depredation event.

When determining placement of game cameras, Nunlist explained that a lack of images of predators does not necessarily mean that the camera placement was poor; it may just not be the right time of year. "Don't expect camera placement to be effective all year long, successful placement is seasonal. The placement might work great for a month, but animal use of the landscape is seasonal." This information is key to understanding how wildlife use the landscape so producers can possibly mitigate risk in areas where and during times when depredation events are more likely.

Photo 11by: Melanie Elzinga

SURPRISING BENEFITS OF RANGE RIDING

Alderspring Ranch

We have three basic goals, the primary one being that we must have an economically sustainable operation. If our operation can't pay for itself, we can't achieve the other two goals," Glenn Elzinga explains.

The Elzingas' second goal is an ecological one: to continually improve the condition of upland and riparian habitats on the lands they steward for a variety of species, including wolves, sage grouse, salmon, bull trout, and threatened and endangered plants. Through grazing management, the Elzingas have allowed the riparian areas to reboot and are now seeing species of willow and herbaceous plants once thought extirpated.

The third goal has to do with people. As Elzinga explains, "We need to train a new generation in the science and art of stewarding these lands in a responsible yet profitable manner. Our interns quickly learn that these cattle are a million-dollar investment entrusted to their care, that this job requires focus and commitment."

After years working for the federal government as a professional forester (Glenn) and plant ecologist (Caryl), the Elzingas shifted gears to cattle ranching in Idaho's Pahsimeroi Valley. Part of their program includes training interns in low-stress livestock handling to protect yearling cattle from wolf predation. "We generally hire interns with a clean slate; that is, few preconceived ideas about livestock handling," Glenn Elzinga said. The Elzingas select five or six interns out of 50-60 applicants each year.

In summer, after wintering and calving in the valley, the Elzingas head to the high country on the Alderspring Ranch in central Idaho. Glenn and Caryl Elzinga graze yearling cattle among wolves, lions, and black bears. "We need to train a new generation in the science and art of stewarding these lands in a responsible yet profitable manner," said Glenn Elzinga. "These cattle are moved frequently as calves among electrified paddocks, so they have frequent low-stress contact with humans, horses and dogs by the time we trail to the mountain summer pastures." Using pressure-release, low-stress handling practices along the way, this mixed bunch of 600 – 1,200 pound yearling heifers and steers learn the safety of the herd. It takes about a month before the group truly functions as a herd, or, as Bud Williams says, 'make the cattle want to do what you need them to do.'

"We talk, call or sing so the other riders and cattle know our whereabouts. This effectively keeps the herd bunched together and moving slowly throught the timber as a unit."- Glenn Elzinga

Riders attend the herd constantly, camping alongside them at night. The herd beds in temporary, electrified night-penning enclosures that are moved periodically throughout the summer. Cattle are penned at night and grazed across different grazing circuits each day. "In order to be profitable, these cattle need to average two pounds of weight gain per day through the summer, so they need to get their fill of fresh feed every day." By managing in this way, the cattle gain better, and "they feel safe in the herd, without stress from herders or predators." The Elzingas have also found that keeping the herd moving and on fresh feed reduced their cattle death loss from predators and poisonous plants to zero.

One advantage to using yearlings is their trainability. For example, with constant and consistent herding, they quickly learn that riparian areas are not a food source. "Before long, the yearlings don't even try to feed; they just get a drink and move back upslope." The Elzingas observe that their riparian areas responded positively to this management. "It's as if they've rebooted. We're seeing species of willows and other plants we thought were long gone."

There are generally two to three riders within 300 feet of the herd at all times, and they have even learned to work the cattle in the timber. "I don't want to avoid the timber. There are times when it is good forage, and it is benefitted by periodic grazing," Elzinga says. He has developed a systematic way to graze cattle in forested areas, even though herders can only see a portion of the herd at any given time. He explained, "The three riders are arranged around the herd at roughly 120-degree intervals. We all know the direction we're moving, and each rider works back and forth along their respective perimeter until they hear or see the adjacent rider. We talk, call or sing so the other riders and cattle know our whereabouts. This effectively keeps the herd bunched, grazing and moving slowly through the timber as a unit."

Photo by: Melanie Elzinga

WOLF MONITORING THAT WORKS FOR RANCHERS

Monitoring wolf movement helps ranch managers understand when and where these clever canids move through the landscape. This information can help with a host of management decisions that aim to reduce, and perhaps even prevent, conflicts between wolves and livestock, from understanding when and where to apply scare devices, to managing livestock to avoid wolf rendezvous sites, to trapping wolves for collaring or lethal removal.

n a community meeting in Walden, Colorado, hosted by Western Landowners Alliance and the North Park Stockgrowers Association, Cat Urbigkit, a sheep and cattle producer in Sublette County, Wyoming, shared tools and tips for wolf monitoring with ranchers adjusting to the presence of wolves after wolves moved into Colorado from Wyoming.

After wildlife managers were unsuccessful in determining the location of uncollared wolves on her Wyoming ranch, Urbigkit decided to take matters into her own hands. "We decided to start our own program to try to figure out how many wolves we were dealing with," said Urbigkit.

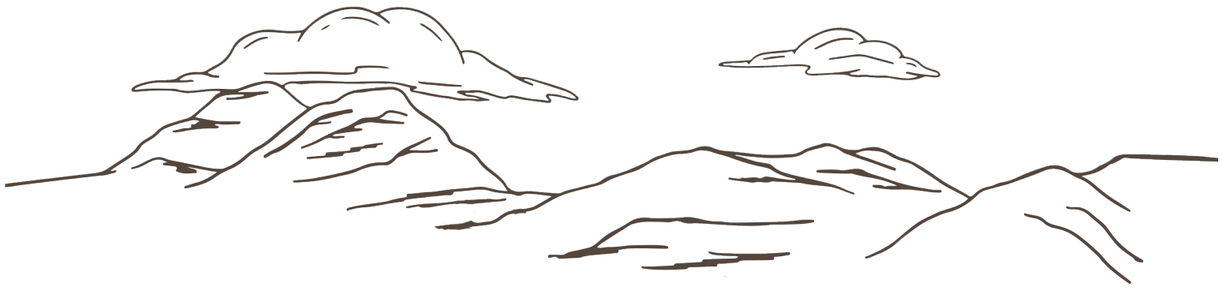
Wolf monitoring starts with the goal of identifying the trails and rendezvous sites the wolves use to travel during different times of day and periods of the year. By keeping a keen eye on where her own herding and livestock guardian dogs scent mark, Urbigkit notes likely marking locations by wolves.

Urbigkit then sets wildlife camera traps for operation at night (she uses the Bushnell E3, which retails for about $110) at those locations. A camera trap that can take quality night photos is important, as wolves that live near humans are often most active after dark. Urbigkit also noted, "We will have wolves that will walk behind the camera and intentionally go around it," so placing cameras at pinch points and above wolf eyelines are important considerations. In addition to cameras, Urbigkit will occasionally sweep dirt roads or paths to ease in track identification, and look for wolf hair on fences as she does repair work or rides fence lines.

By calendaring locations of wolf sightings each month when she checks the camera traps, Urbigkit develops a picture of trends in wolf movement: whether a single wolf or a wolf pack shows up once a day, once a week, or once a month. This allows her to adjust her use of scare tactics, like fox lights and sound machines, and her grazing patterns to most effectively reduce conflicts.

Whether wolves have just moved onto your landscape or have been around for some time, monitoring their movements is a valuable component of range riding and managing a livestock operation to keep conflict down and livestock health up.

"We decided to start our own program to try to figure out how many wolves we were dealing wtih."- Cat Urbigkit



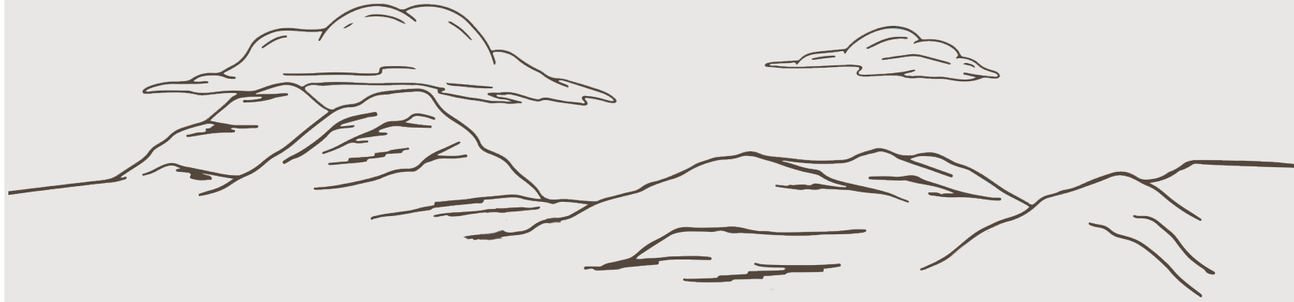
AUTHORS

Rae Nickerson • Matthew Collins • Breanna Owens • Jay Shepherd

Nathan Owens • Erika Nunlist • Julie Young • Erin Edge • Alex Few • Jared Beaver

ACKNOLEDGMENTS

We would like to thank the many landowners, livestock producers, program managers, and countless other individuals who were interviewed and/or provided input to support this document. This document is the product of the Conflict on Working Lands Conservation Innovation Grant (COW-CIG), funded through the Natural Resource Conservation Service (NRCS) as well as Western SARE. Special thanks to Thad Header of NRCS, the technical contact for the CoW-CIG Grant and to Erin Edge of Defenders of Wildlife for your support through this process.



MADE IN COLLABORATION WITH:

HEART OF THE ROCKIES INITIATIVE

WESTERN LANDOWNERS ALLIANCE

USDA United States Department of Agriculture Natural Resources Conservation Service

SARE Western Sustainable Agriculture Research and Education

MONTANA STATE UNIVERSITY EXTENSION