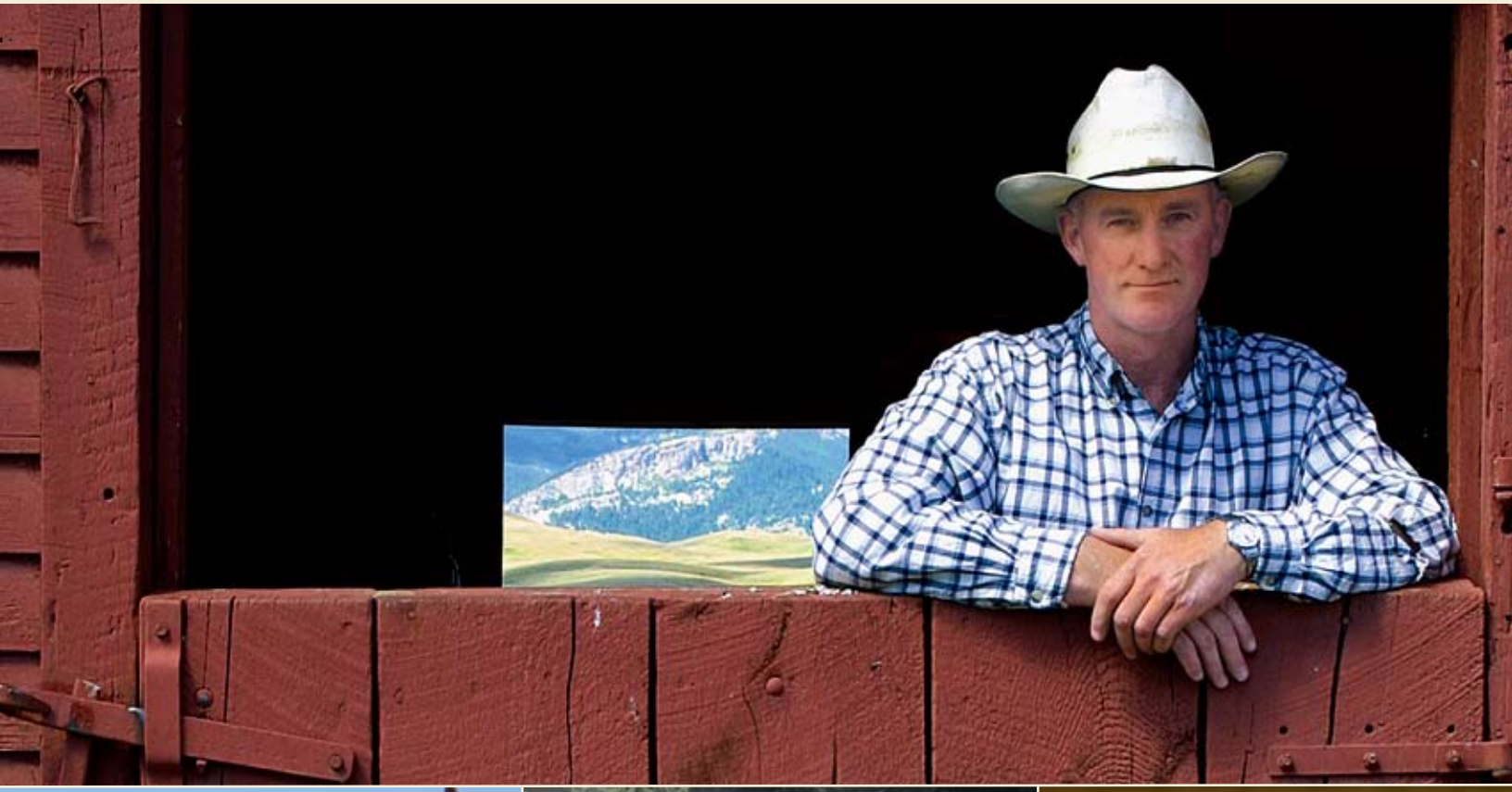
Livestock and Wolves

A Guide to Nonlethal Tools and Methods to Reduce Conflicts



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Defenders of Wildlife is a national, nonprofit membership organization dedicated to the protection of all native wild animals and plants in their natural communities.

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Special thanks to The Bailey Wildlife Foundation for their generous support of proactive projects and research and to the Sand Dollar Foundation for underwriting a 2006 workshop on nonlethal methods and the development of this guide.

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Cover photos: Montana rancher © Dal Neitzel; longhorn steer © Jim Pissot/Defenders of Wildlife; sheep and fladry © Brad DeVries/Defenders of Wildlife; wolf © Jess Lee/jessleephotos.com

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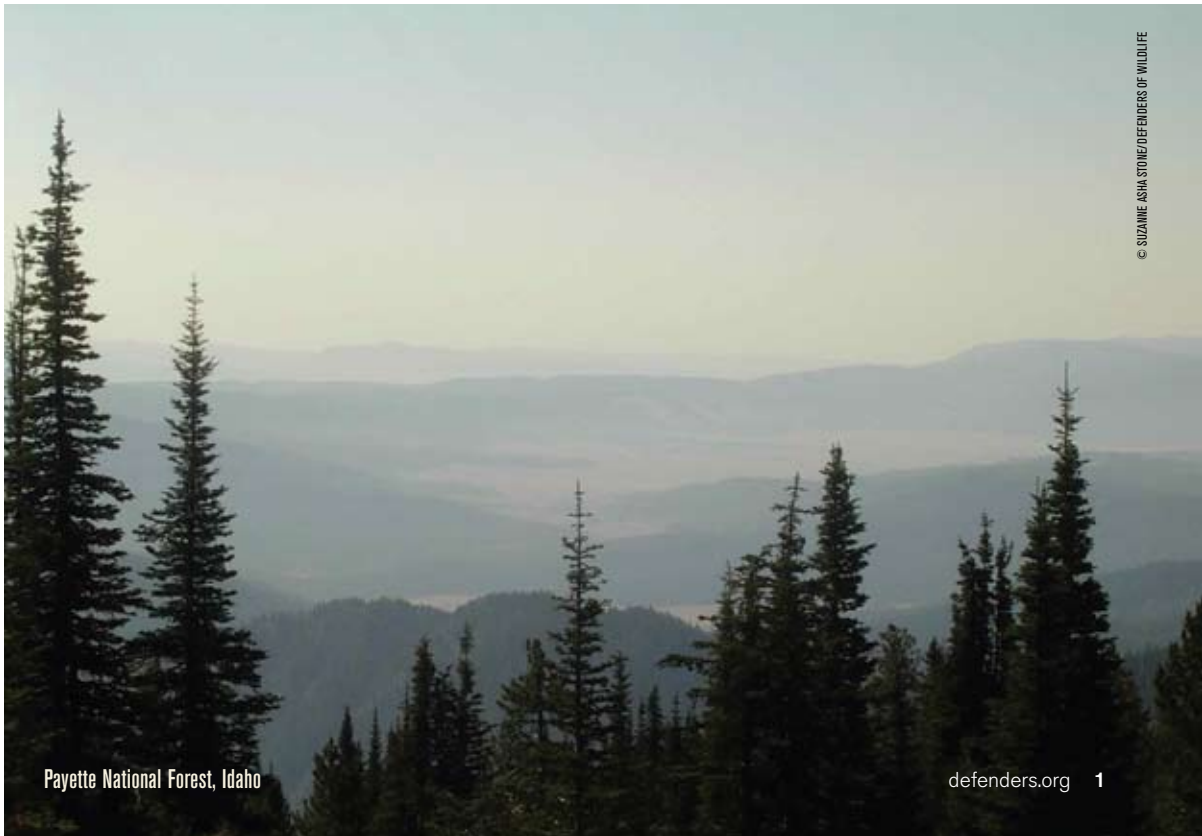

Payette National Forest, Idaho

Introduction

As a livestock producer or resource manager operating in areas where wolves live, you have no doubt wondered how you can keep your animals safe in an economically viable way. You may have raised livestock for decades before wolves returned to your region and may be unsure of what to do to prevent livestock losses should wolves show up near your operations. In some areas, wolves are protected under federal, state or provincial law, so you need to know what conflict-prevention strategies you can legally use. Most important, you need to know what will work best in your particular situation.

Sometimes wolves are killed to prevent additional livestock losses. This lethal control may relieve conflicts temporarily. However, new wolves will often move into the vacated territory, and the cycle of loss will continue—unless the root cause is addressed. The purpose of this guide is to show you what you can do to address the root cause in economical ways that protect both livestock and wolves. It covers nonlethal tools, methods and strategies that work and offers real-life examples of successful solutions devised by livestock producers, agency managers and researchers working together.

Chapter 1 describes key factors to consider when evaluating your own livestock operation. Chapters 2 through 8 provide examples of the different approaches and their benefits and limitations. This guide covers the basics, but it is not intended as a substitute for expert advice. You may still need the help of wolf management professionals to evaluate and tailor nonlethal control measures to your situation. You can find these experts through the state-by-state directory of resources at the end of the guide. For even more information, check the references and additional reading in the bibliography.

We hope you find this guide helpful and welcome your feedback. Please contact any of the Defenders field offices listed at the end of this guide to share your thoughts and experiences. Your feedback is valuable and may help other livestock producers or resource managers in the future.

HOW THIS GUIDE EVOLVED

In 1999, Defenders of Wildlife and The Bailey Wildlife Foundation worked together to create The Bailey Wildlife Foundation Proactive Carnivore Conservation Fund. One of the main purposes of this fund is to support research and on-the-ground use of tools, methods and strategies to reduce livestock deaths and therefore reduce lethal control of wolves. Five years later, Defenders established the Livestock Producer Advisory Council to provide advice from a producer's viewpoint.

In 2006, Defenders brought together wildlife conservationists, university researchers, agency staff who work on wolf-livestock conflicts, biologists and members of the Livestock Producer Advisory Council for a Yellowstone-area workshop to evaluate proactive livestock protection tools and nonlethal methods and strategies that are helping to reduce livestock losses to wolves. This manual incorporates the experiences, insights and recommendations of the workshop participants and from ongoing discussions and interactions with livestock producers and researchers.

1. Assessing Your Needs

Deciding which tools, methods and strategies are suitable for protecting your livestock depends on many different factors. Start by contacting local wildlife managers to help you evaluate your situation and identify what will work best for you.

What type of livestock you need to protect is an important consideration. Research suggests that when wolves attack livestock, they focus on the animals that are easiest to kill. For instance, wolves rarely attack adult cattle and horses. They tend to prey more on sheep, goats and calves, and, in some areas, yearlings. Another key consideration is where your livestock are grazing. Livestock on large grazing allotments—publicly owned lands where grazing is allowed by permits issued by the federal government—can be one of the most difficult wolf-livestock conflict situations to resolve. Many of these allotments are in remote and rugged terrain with very dense trees and brush, making it harder for sheepherders, range riders or wranglers and livestock managers to spot a potential conflict.

Overall, the important factors to consider include:

- Number, age and type of livestock needing protection
- Season
- Location and accessibility of site
- Size of grazing area
- How often people directly supervise the livestock

Thinking like a wolf

When developing a strategy for reducing risk to your livestock, it helps to understand things from a wolf's perspective.

Wolves are natural hunters but are also scavengers, which means they feed on dead animals, too, and the smell of a rotting carcass will attract them. Their hunting patterns are designed to detect the most vulnerable prey and to avoid injury by their prey, other predators or humans. Wolves often focus on the weakest animals in a herd or band and are adept at detecting injured or diseased animals. A wolf can usually tell if a healthy adult prey animal it normally would not attack has somehow become disadvantaged—hindered from escape by deep snow, for example. In addition, wolves are quick learners and can overcome their fear of certain scare devices such as sounds or lights, especially if exposed to the same device repeatedly for long periods.

Depending on your situation, to remain effective you may need to change devices and methods frequently to keep wolves from getting used to them and losing their natural wariness. Increasing the wolf's perception of risk can help reduce the chances of wolf-caused livestock injury or death, but working proactively to prevent carnivores from being attracted to your livestock operation in the first place (see Chapter 2) is often the best strategy of all.

A range rider surveys a livestock watering hole on a Wyoming grazing allotment.

Livestock stress and permit considerations

When practical, the best solution may be to build small night corrals to protect livestock within a small pasture, rather than fence large multi-acre pastures, which can be too costly. However, penning livestock every night can present challenges.

Penning can stress animals not accustomed to it, and increased stress may affect the condition of the animals and, in the case of sheep not used to penning, the quality of their wool. The permits that allow grazing on national forest land may not allow the erection of pens. Moreover, penning can harm native plants if you do not move the livestock frequently and the vegetation is overgrazed or trampled.

Some livestock producers who are now successfully using electric night pens are using them on private pastures where the livestock can more easily adapt to these night-time enclosures.

One band of sheep in Montana is now so well-adapted to their night pen that, like chickens coming home to roost, they often seek it out at the end of the day. In New Mexico, a rancher using a two-strand electric fence system to create small, easy-to-monitor pastures reports that his cattle are so accustomed to their routine that he can move his entire herd in less than half an hour using only a whistle, two dogs and a load of fresh feed. Chapter 4 provides more information on fencing.

Seasonal and location-based considerations

Some projects require different strategies depending on the season or location. For example, if you decide to use guard dogs to protect your animals, you should not use them near wolf den sites in spring when wolves will aggressively defend their young from other canines (dogs, coyotes or other wolves that are not members of their pack).

Using livestock guarding dogs in these areas at this time of year would actually increase the likelihood of conflicts with wolves. However, using guarding dogs at other times of the year with sheepherders or range riders present to assist the dogs appears to help greatly reduce livestock losses to wolves. Chapter 3 addresses these issues and more on guarding dogs.

The importance of record-keeping

Good record-keeping can be a valuable tool in solving wolf-livestock conflicts. Records of interactions and related observations can help producers identify trends, problem areas and vulnerable times of year, which can help improve the effectiveness of targeted, preventative measures.

Solid information will help inform decisions on the type of devices or activities that are most appropriate and help guide their use. This can reduce the need for experimentation and improve the likelihood of success.

For example, good record-keeping can help identify pastures where repeated predator problems occur at certain times of the year. Simply changing grazing schedules to use problem pastures at other times or for less vulnerable livestock may reduce or eliminate losses.

In addition to keeping good records of wolf-livestock interactions and other observations, it is important to count your livestock regularly when possible. This is especially true in large pastures or areas with dense vegetation and/or rugged terrain where dead livestock could go undetected for weeks or months.

Producers who do not regularly count their animals can suffer substantial losses before they even discover that their livestock are missing. This makes it more difficult to identify and put into action timely and appropriate loss-avoidance techniques that could reduce livestock casualties and the need for wolf control. It can also complicate the cause-of-death determinations typically required where compensation payments are available.

Communication, agreement and evaluation

Working with agency staff, fellow livestock producers and others to figure out a strategy as a team and to share the costs of a project is highly recommended. As one rancher puts it, this is "a great place to start," because "the collaborative process works and can help those with divergent opinions resolve misunderstandings without damaging the value of one another as human beings."

A written agreement that clearly defines expected roles and responsibilities and fosters good communication is essential whenever you are collaborating with others. A mechanism for evaluating the project should also be included as each project, whether successful or not, helps provide valuable information about the effectiveness of methods in varying situations. ■

KEY POINTS: Assessing Your Needs

- Contact state and federal wildlife managers to help evaluate your situation and identify appropriate techniques for your operation.
- Consider the number, age and type of livestock; the season; the size of the grazing area and how often people check on the livestock.
- Be proactive by taking actions to reduce attractants to your livestock operation in the first place.
- Evaluate your livestock protection strategies often to ensure that you are using the best options for your situation.
- When working with a team from different agencies or organizations, draw up a written agreement describing duties and roles.
- Keep records of what you are doing so you can evaluate, compare and make modifications as needed.

2. Reducing Attractants

Like other canines, wolves have a very good sense of smell and can detect prey two or more miles away. An appealing scent or vulnerable animal is enough to draw a wolf into an area or onto your property. Any type of dead, diseased or dying animal left out in the open is an attractant for scavengers and easily identified as vulnerable prey by predators. Once animals that are both scavengers and hunters—such as wolves, bears and eagles—get a taste for dead livestock, it is not a big step to go from feeding on a carcass to hunting and killing live cattle or sheep if they are nearby. The afterbirth from calving can also be a powerful attractant for wolves, a fact to consider when planning the timing and location of calving activities (see Chapter 8).

Hauling away, burying or burning livestock carcasses rather than leaving them in the field to rot reduces the chances of attracting predators. It also limits the food supply in the area, which can result in a lower number of predators in general. Once a wolf becomes used to a food source, such as dead livestock lying on the ground or in an open pit, it is more difficult to stop it from returning to look for an easy meal. Thus, preventing the attraction in the first place is important.

© JIM BRANDENBURG/MINDEN PICTURES

A wolf shares a deer carcass with a flock of ravens in Minnesota. Scavengers as well as predators, wolves are strongly attracted by dead animals.

Constructing a carcass pit

Many livestock producers use carcass pits where possible to dispose of dead livestock and reduce the presence of attractants on their operations. To be effective, a carcass pit must be properly constructed and maintained. When possible, the pit should be located away from your livestock, home, sensitive agricultural areas or any other place to which you do not want to lure predators unintentionally. The pit should be at least eight feet deep to discourage scavengers from entering.

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Fencing around a deep carcass pit is an added barrier to wolves and other scavenging predators drawn to the area.

By regularly burning or burying carcasses in the pit, you help prevent attracting wolves to your area or keeping them there if they happen to visit. Surrounding the pit with predator-resistant fencing provides an additional barrier. If your pit is poorly constructed or maintained, however, it can attract carnivores, which will wander off their regular routes to visit the pit. If constructing a carcass pit or burying carcasses is not an option, a rendering facility or commercial landfill are alternatives you can explore. ■

KEY POINTS: Reducing Attractants

- Remove diseased or dying animals from areas where they can attract wolves and other animals.
- Haul away carcasses or dispose of them in properly constructed and maintained pits whenever possible.
- Make your carcass pit at least eight feet deep to discourage scavengers from entering it.
- Routinely burn your carcass pit or cover it with dirt.
- Install fencing around your carcass pit to further reduce the chances of wildlife getting into it to feed on carcasses.

3. Working with Livestock Guarding Dogs

Livestock producers around the globe have long relied on dogs to protect livestock from carnivores such as wolves, bears and lions. In some instances, the mere presence of dogs seems to help keep wolves away from livestock; in other cases, dogs play a more active role by alerting herders to predators in the area.

The ability of a guarding dog to protect livestock is partly a result of genetics and careful breeding and partly a result of socialization and proper training. Over the centuries, people have selected the best working dogs for breeding purposes to pass along valuable traits to future generations. Dogs that harassed or harmed livestock were typically relieved of duty and not permitted to breed, thereby removing undesirable traits from the gene pool. Socializing and bonding guard dogs with livestock from a young age is a crucial part of their training (see page 7). The climate and landscape in which the dogs live, the distances they travel, the diseases they are exposed to and the food supply available to them also influence their behavior.

In North America, the use of livestock guarding dogs has been growing since the mid-1970s, mainly to protect sheep and goats from coyotes and domestic dogs. Great Pyrenees, Anatolian shepherds, Akbash and other breeds that have been used for centuries in Europe, Asia and Africa are now used to protect livestock throughout the United States and Canada.

Breeds that make good livestock guarding dogs are not the ones that make good livestock herders. The two functions, guarding and herding, are quite different, and the dogs that do best at each task have been bred for their specific tasks. In other words, border collies and Australian shepherds are born to herd; Great Pyrenees and Anatolian shepherds are born to guard.

How effective are livestock guarding dogs? Researchers at Hampshire College in Amherst, Massachusetts, the U.S. Fish and Wildlife Service's National Wildlife Research Center in Colorado and the United States Sheep Experiment Station in Idaho addressed this question by placing dogs on farms and ranches throughout the United States. Almost immediately, they received reports of fewer livestock losses from predators. Most of the cases studied focused on coyote attacks on sheep and goats, although other predators such as domestic dogs, mountain lions and wolves were included. The researchers also looked at losses of other livestock such as turkeys, llamas and ostriches.

The ability of livestock guarding dogs to protect cows from wolves in northern Minnesota and Michigan has also been tested, and some dogs demonstrated that, if managed correctly, they could be effective. Interviews with cattle ranchers in Kenya, Turkey and Italy also suggest that, if properly managed, livestock guarding dogs can play a valuable role in protecting against a wide variety of predators.

The Anatolian shepherd is one of several breeds developed to guard livestock.

Choosing and using guarding dogs

To determine if livestock guarding dogs would be a valuable aid for a specific livestock operation, consider your primary needs and how such a dog could fit into your current operation. Professionals at the U.S. Department of Agriculture, local agriculture extension agents, other livestock producers who work with livestock guarding dogs, and breeders and breed clubs can help you evaluate your situation and advise you on the selection and use of guardian dogs (see the Resource Directory for contact information.)

Selecting your pups from breeding stock that is doing what you want your dog to do is important. Pups learn from their mothers, so make sure she has the characteristics of a good livestock guarding dog. Base your selection on a dog's working potential, rather than the fact that it is registered and meets the breed's physical standards. Pups can learn behavior, but not all registered livestock guarding dogs have the instincts necessary to do well at the work for which they were bred. The right livestock guarding dog for you is the one that demonstrates the traits necessary to work well in your particular setting. Desirable livestock guarding dogs stay with their livestock and successfully defend them by alerting people to the presence of threatening predators. Ultimately, the best livestock

guarding dogs are attentive and protective of livestock and always alert to potential risks to their charges.

Livestock owners in Europe and Asia often use livestock guarding dogs alone, without herders present, to reduce wolf conflicts. However, wolf managers in the northern Rockies typically advise supporting livestock guarding dogs with a human presence, such as a herder or rider who can add other methods as necessary to scare wolves away.

Open range operations with large flocks or herds of livestock usually require more dogs than a small operation. To the extent possible, the herders or wranglers should make sure the livestock guarding dogs stay with the livestock rather than allow the dogs to try to chase down or attack wolves (or other large predators). A dog permitted to give chase will end up far away from the herder and in the risky position of going one-on-one against a wolf, a situation that can result in the injury or death of the guarding dog.

When wolf packs have new pups, generally from April through June, keep livestock guarding dogs away from known wolf den sites whenever possible and use other means (such as fladry, grazing location alternatives or devices that scare wolves away) to avoid conflicts with wolves. Livestock guarding dogs pose little threat to wolves or their offspring, but wolves appear to be far more aggressive toward dogs. The wolves apparently perceive the dogs as a threat, much as they would perceive strange wolves, and may try

A Great Pyrenees stands guard on an Idaho sheep ranch.

RAISING AND TRAINING LIVESTOCK GUARD DOGS

If you decide to breed and raise your own livestock guarding dogs from pups, it is crucial that they are well socialized with livestock.

Experts recommend raising guarding dogs right in the corrals with livestock, starting when the pups are four to five weeks old. Promptly scold pups that stray from the corral and return them to the livestock.

Minimize the handling and petting of livestock guard dogs and do not treat them like pets. A good dog will come when it is called and allow the owner to handle it (for vaccinations and other health-related needs), but should not seek attention from people.

Provide the pups with nutritious dog food, and don't keep them in dugouts or doghouses (except in extreme and threatening weather conditions). Instead, encourage pups to dig their own dirt beds and sleep among the livestock as they will have to do on grazing pastures.

When the pups are old enough, allow them to accompany livestock to the rangeland. Discourage unacceptable behavior such as biting or chasing the livestock and pulling wool. Immediately remove any dogs that persist in chasing, biting, injuring or killing sheep.

Follow these training guidelines and your dogs will learn important "lessons" during the period of development in which they are most responsive to people and to the livestock they will be guarding.

Guarding dogs raised with livestock bond with their charges.

Great Pyrenees pups are ready for transport to farms in the Great Lakes region where researchers will monitor their effectiveness at protecting livestock from predators.

to defend their young offspring and den sites by seeking out and killing the dogs.

Livestock owners who are working more than two dogs together to defend livestock report a decrease in predator attacks. Wolves, particularly lone wolves, tend to avoid encounters with other packs of wolves and appear to perceive multiple dogs as another pack.

Although the use of multiple dogs is recommended, there is also a limit to the number of dogs that can be adequately cared for and managed effectively. Some producers report that when five or more dogs are used per flock of sheep, the dogs become more interested in socializing with each other than in guarding livestock. As a rule, more dogs are more effective, but the characteristics of the individual dogs play a critical role in their ability to work together as a team.

Different breeds of dogs differ in their level of aggressiveness toward people, and you may need a different type of dog if you ranch in a less rural or remote area versus an isolated area. For example, if you intend to use livestock guarding dogs in or next to federal lands, such as a national forest or recreation area where they may encounter members of the public, you need to consider the dogs' level of aggressiveness toward people (hikers, cyclists, horseback riders, etc.) and their pets. Guarding dogs that are too aggressive may pose a risk to the public. Some producers post signs to alert the public that livestock guarding dogs are in use in the area as a nonlethal method to reduce conflicts with native predators and may bark aggressively if livestock are approached too closely.

If you are going to use livestock guarding dogs in a fenced or pasture operation (as is usually the case in the midwestern and eastern United States), a critical step in training your pups is to introduce them to secure fences and the area where they will be working. This helps the dogs bond to the area so they are less likely to escape or roam outside pastures.

If you are using livestock guarding dogs and not getting good results, you may need to re-examine the number of dogs you are using per flock/herd or setting. Also review how to choose and raise pups—especially during the critical development period between two and 12 weeks of age—and, in general, what best matches your needs in a livestock guarding dog.

For livestock guarding dogs to work successfully, a thorough understanding of guard dog training and management and how this proactive approach applies to your operation is vital. ■

KEY POINTS: Livestock Guarding Dogs

- To determine if livestock guarding dogs are an appropriate choice to help protect your livestock from conflicts with wolves, carefully evaluate your particular operation with the help of professionals experienced with the use of these dogs.
- Livestock guarding dogs defend livestock from wolves most effectively by alerting people to the presence of wolves, not by fighting off the wolves. Do not allow them to chase down or attack wolves. Once they sound the alert, they need human support, such as a herder who can use other methods to deter wolves by scaring them away.
- Keep livestock guarding dogs away from active wolf den sites to avoid increasing conflicts with wolves protective of their pups.
- If you are already using livestock guarding dogs but not seeing results, contact a wolf management specialist in your state to help you re-evaluate.

4. Erecting Barriers: Fencing, Fladry and Penning

Barriers are used effectively to deter predators such as wolves and bears throughout North America, Europe and Asia. Electric fences or combinations of wire mesh and electric fences have been particularly successful under some conditions, especially when used for protection at night when wolves are more likely to prey on livestock. Some fencing techniques are portable and can be used with good results even in open-range situations. There are also ways to increase the effectiveness of fencing with the addition of fladry, a series of red or orange cloth flags hung at 18-inch intervals along a thin rope. This rope of flagging can be used alone or strung along an existing fence line.

Fladry was first developed and used by hunters in Eastern Europe to funnel wolves into an area. Once caught in the fladry trap, wolves were reluctant to cross the barrier and were shot. In Canada and the United States, researchers adapted the fladry technique as a nonlethal method for keeping wolves out of livestock enclosures. More recently, researchers in Idaho developed an electrified version of fladry called "turbofladry," which is simply fladry hung on an electrified fenceline powered by solar-charged batteries. Wolves that attempt to cross the turbofladry or try to bite or touch the barrier as wolves often do, experience an electric shock similar to that delivered by other types of electrified fencing.

Choosing and using barriers

Permanent fencing

Permanent fencing has proven to be a very effective deterrent under some conditions. It tends to be more suitable for smaller operations where livestock use night corrals or small pastures. The fence must be sturdy, tall enough that predators cannot climb or jump it, and free of any gaps where a predator could slip through. (If the fence is penetrated, livestock unable to escape attack in the pen are more likely to be hurt or killed.) Since the height needed depends on the fencing material (woven type versus electric, for example) and the type of livestock you want to protect, seeking the guidance of biologists or wolf managers is highly recommended. These experts can help you assess your situation and design an effective permanent fencing structure.

For livestock kept in large enclosures or on open range, permanent fences are typically too costly to build and maintain. In addition, permanent fences are not portable and therefore of little use when livestock are freely roaming. This can make protecting livestock on open-range grazing allotments difficult. Some of these allotments are on national forests in the northern Rockies—also prime wolf and bear territory—and report some of the highest losses of sheep to predators. Livestock in this area are often moved on a seasonal basis or grazed on open ranges during the spring, summer and fall. Permanent fences are impractical for such large-scale operations.

Portable fencing

Portable fencing or pens can be a very effective tool when permanent fencing is not a good option. You can construct portable fences from several different types of materials including multiple electric fencing strands, wire mesh and portable panels. The cost, utility and effectiveness vary based on the type and number of livestock and the terrain. To reduce stress on your animals, you may have to spend some time getting them accustomed to the portable pens. If you have an allotment, make sure your grazing permit allows the use of portable fencing. You should also regularly move the fencing to keep the native plants from being trampled or overgrazed.

FLADRY SAVES THE NIGHT

When repeated attacks by wolves had claimed dozens of sheep and government agents had killed two packs of wolves in an attempt to stop the attacks, one sheep producer was ready to try something new. As part of the solution arrived at in consultation with agency wolf experts and Defenders' staff, sheep managers installed a portable electric night pen on the operation near Red Lodge, Montana. As a second line of defense in case the solar battery failed, they added a strand of fladry to the outside perimeter of the pen. The sheep are now so accustomed to the pen, which is not moved frequently, they usually enter it on their own at day's end.

Since installing the pen in 2005, the producer has lost only one animal to wolves, a ewe accidentally left outside the pen. He has also has seen dramatic evidence that fladry works.

One night in spring 2007, the power source for the pen's electric fencing went out. The next day, sheep managers found a set of wolf tracks in the snow. The tracks led up to the pen, turned away and reapproached it from another side before turning away again and wandering off. The electric night pen has continued to be effective in preventing wolf-caused losses, but the fladry barrier is credited with deterring the wolves from killing sheep while the electric fencing was not working.

Fladry—red flags hung at 18-inch intervals along a thin rope—is an inexpensive, portable and effective method of keeping wolves away even in open range.

Fladry and turbofladry

Fladry fences are much less expensive to produce and install than wire or permanent fencing. Fladry is also easily moved and can be quickly installed over large areas—even by one person. How the fladry is hung and the materials used play a role in its effectiveness, so it is important to seek the advice of wolf managers experienced with this method before trying it. Fladry also requires regular maintenance. Cattle are known to chew and pull on it, and a broken, tangled, pinned down or otherwise compromised fladry barrier is likely to fail. Regular maintenance, including the replacement of aged, torn or faded fladry, is essential.

Fladry alone is most effective as a short-term deterrent. As with all proactive methods, wolves may stop responding after a period of exposure, rendering the method ineffective for preventing losses. The added "bite" of turbofladry—fladry on top of electrified line—uses electric shock to enhance the negative experience of wolves that come into contact with fladry. This reduces the chances of the wolves losing their fear of fladry, likely extending the time that this barrier remains effective. Turbofladry is more expensive, but estimates show it can be three or more times as effective. Like regular fladry, turbobarriers are highly portable and relatively easy to produce, but still require substantial maintenance to remain effective. ■

KEY POINTS: Barriers

- Type of livestock and grazing conditions are important factors in considering what type of barrier to use.
- Permanent fencing can be a good option for smaller operations where night corrals or small pastures can be fenced affordably.
- For open-range conditions, portable fencing and pens are more easily used and affordable, but stress to livestock and native plants and the conditions and restrictions of grazing permits must be considered.
- Fladry can be used alone or as an addition to permanent or portable fencing. It is relatively inexpensive, but must be properly installed and maintained.
- Turbofladry, fladry hung on electrified fencing, can increase the length of time that fladry is an effective barrier against wolves.
- Consult a wolf manager experienced with the different types of barriers to help determine which one is best for your operation.

5. Increasing Human Presence: Range Riders and Herders

Livestock losses from wolves often occur when the producer is unaware that there is a wolf pack nearby. Knowing what wolf activity is occurring in your area is essential to protecting your livestock. Increasing the human presence on the range with riders or herders allows you to keep an eye on your livestock and wolf activity and may be one of the best ways to deter wolves.

A range rider, for example, can patrol your ranch or allotment at dawn and dusk when wolves are most active. The rider checks for signs of unusual agitation in the cattle that can indicate wolves or other predators are in the area. The rider also listens for howling and looks for other signs that wolves are present such as tracks, scat and hair snagged in fences.

Rider protocols vary from place to place, but the underlying concept is similar: wolves tend to stay away from areas where there is a regular or frequent human presence. When riders respond quickly to inappropriate wolf behavior, such as approaching or chasing livestock, the wolves are likely to feel threatened and to avoid contact with riders.

The primary goal of increased human presence is to reduce livestock-predator interactions and livestock losses. Secondary goals include quickly finding sick, injured or dead livestock; preserving the evidence of a livestock loss to help investigators determine the cause of death or injury; monitoring livestock movement and range conditions; and learning more about livestock-predator interactions.

Range rider and herder basics

Cattle on public grazing allotments—and in some circumstances on private lands—are often spread across a wide area, which may include rugged, partially forested land. That means range riders have to cover as much ground as possible while checking on livestock and may not be in exactly the right location at exactly the right time to respond to wolves. Even so, the chances of preventing a loss are better than in places where human presence is more limited or infrequent.

From 2005 to 2008, range rider projects sponsored by Defenders and others reported low-to-zero losses in comparison to the higher losses recorded before the riders were deployed. With so many variables from place to place, there is no absolute proof that range riders actually prevented livestock losses from predators such as wolves.

PROTECTING HERD AND PACK

The Beaverhead-Deerlodge National Forest in Montana's west-central mountains is home to the 14-member Sapphire wolf pack and to a grazing allotment held by a family of ranchers in the region. When these ranchers documented a high number of missing cattle during the summer of 2006, they turned to Defenders of Wildlife and state wolf managers for help.

Given the large size and heavy forestation of this allotment, a range-rider program was determined to be the best tool to monitor wolf activity and reduce livestock losses during the summer grazing season. Defenders helped share the cost of the rider and wolf monitoring equipment, which provided a safety net for the livestock and the pack on this ranch. As conditions permitted, and with appropriate training, riders also used a variety of nonlethal methods to harass wolves including rubber bullets, cracker shells (only when the risk of unintentionally starting a wildfire was low) and alarm systems. As a result, the rancher reported a dramatic drop in losses during the summer of 2007: only two calves lost–a "drastic improvement from last year's cattle situation," according to range rider Doug Hesse.

"It appears the range rider program is working at the ranch," said Hesse. "I believe that all things considered, some major and very realistic successes have been achieved–several hundred head, on several thousand mountainous, wooded acres in prime habitat for a very stout wolf pack, and both the cattle and wolves are still firmly intact."

A range rider monitors a herd in Montana.

However, when surveyed, all participating producers said they believed the range rider program was helpful in preventing losses and that they were interested in continuing the practice.

Like cattle operations, sheep operations can benefit from adding more herders to increase protection for their animals. This is especially true at night when the sheep are on bedding grounds and most vulnerable to predators. The additional herder(s) can cover the night shift and focus solely on preventing losses from predators. Herders can also boost their effectiveness by working with livestock guarding dogs that can alert them to the presence of wolves and other predators.

Riders and herders can monitor livestock closely, providing other advantages such as preventing livestock from overgrazing sensitive meadows and streambeds, reducing the chances of livestock theft and detecting early signs of livestock diseases and the presence of plants toxic to livestock. Adding this kind of personnel increases production costs for the livestock operation. Finding experienced riders and herders can also be difficult because wages are usually low and the work is hard, especially when it involves nighttime surveillance and camping with livestock. Agencies, conservation groups and other ranchers may be able to help by pooling resources for range riders and other preventative measures. ■

KEY FACTORS: Increasing Human Presence on the Range

- Using range riders for cattle operations and more herders for sheep operations can provide additional protection against predators.
- Range riders can monitor the cattle while looking for signs of wolves and scaring away any that get too close to livestock operations.
- Sheep herders can work in shifts, with the herder on night duty focusing on spotting and scaring away predators while sheep are on bedding grounds.
- Increased human presence has other benefits such as the protection of sensitive grazing areas, prevention of livestock theft and early detection of disease and plants toxic to livestock.
- Agencies, conservation organizations and other ranchers may be able to help pool resources to establish range-rider or herder programs.

Range riders increase the human presence on grazing lands; the more people on the range, the less likely wolves are to come around.

6. Using Scare Tools and Tactics: Alarms, Shock Collars and Nonlethal Ammunition

Researchers are constantly developing and testing tools and methods for keeping wolves away from livestock. A wide range of alarm systems, shock collars and nonlethal types of ammunition are already proving effective, and programs that include agency-issued permits and training are available to help you use these tools. Some require agency experts to install and maintain; others require training before you can use them effectively and safely yourself.

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The radio-activated guard system—RAG box for short—affixed to this fence consists of loudspeakers and a battery-powered computer housed in a metal box.

Alarms

In the early 1990s, a Montana rancher had an idea for an alarm system triggered by the radio collars that biologists use to track and monitor wolves. Acting on this idea, researchers from the U.S. Department of Agriculture's (U.S.D.A.) Wildlife Services developed what is now known as a radio-activated guard system—RAG box for short.

RAG boxes consist of a receiver, a bright strobe light, two loudspeakers and an internal computer that collects and stores information received from transmitters on wolves' radio collars. You attach the RAG box to a fence line or place nearby and set it to go off with sound and light whenever it picks up a signal from a radio collar. The flashing lights and loud sounds usually scare off wolves and reduce their interest in entering or remaining in the area. The RAG box's computer also collects information such as radio collar frequency (each wolf's collar has its own), date and time the wolf was present, and the number of times the wolf approached the area.

TEST CASE: RAG BOXES AND THE WHITE HAWK WOLF PACK

In winter 2001, wolves from the eight-member White Hawk pack, half of them wearing radio collars, moved into the East Fork drainage of the Salmon River in Idaho's Salmon-Challis National Forest. Researchers placed five RAG boxes in range to protect approximately 70 percent of the 1,000 cow-calf pairs that grazed in small pastures on private land near the forest from late February through May.

Through mid-March, the RAG boxes activated approximately 10 times, presumably in response to the approach of radio-collared wolves. During this period, no calves were killed as compared to repeated wolf-caused losses the previous year. On the night of March 18, wolves killed a calf in a pasture with a RAG box that apparently failed to activate. One wolf was shot that night and the rest of the pack left the pasture. Information from the RAG box computer indicated that the box had failed to activate, even though radio-collared wolves passed within range. The cause of the malfunction was determined and corrected.

The White Hawk pack was present in or near the fields almost every night for another 25 days. The RAG box computers indicated the scare devices were firing while wolves were present. The computers also recorded wolves leaving the pastures after the RAG boxes had fired. In mid-April the White Hawk pack moved out of the valley, rarely to return for the rest of the year. Except for the calf killed due to the malfunction on March 18, the pack claimed no more cattle in the area in 2001.

In January 2002, the White Hawk pack returned to the East Fork of the Salmon River. The wolves avoided cattle pastures with RAG boxes until late March, when RAG box computers indicated wolves were getting used to the devices and staying near them longer after activation. Wolves then killed one sheep and two more calves despite adjustments to the boxes by agency staff trying new sounds to scare wolves away. With no other nonlethal options, agency managers killed the rest of the pack once they determined that the wolves had lost their wariness of the RAG boxes.

The White Hawk pack did not kill livestock for three months in winter-spring 2001, one month in summer 2001 and two months in winter-spring 2002, times when the RAG boxes were operating properly and the wolves had not yet become used to them. RAG boxes also appear to offer a significant advantage over scare devices that fire randomly or at fixed intervals, especially when used in short-term situations in which wolves are less likely to get used to the boxes and be undeterred by the sounds they emit.

Shock collars

Shock collars are widely used as a corrective training tool with domestic dogs, but the use of these collars as a nonlethal management tool for wild wolves has been very limited. In 1998, the Wisconsin Department of Natural Resources put a shock collar on a wolf near a cattle farm that had been suffering wolf-caused losses. Whenever this wolf approached the farm, researchers gave it a corrective shock, and it quickly moved away from the area. No wolf-caused losses occurred on the farm during the time this wolf was shock-collared.

Nonlethal ammunition

Certain types of ammunition that make a loud sound when fired or that can hit an animal without injuring it can be used to scare away wolves. These include cracker shells, beanbag shells, paintballs and rubber bullets.

Cracker shells are small, firecracker-type devices contained in a shotgun shell. These shells make two blasts—an initial blast when the shell is shot out of the gun and ignites and a second loud blast when the firecracker fuse burns down and explodes about 50 yards to 75 yards away.

Beanbag shells, paintballs and rubber bullets are used in place of conventional ammunition. Beanbag shells are square bags filled with beans and rolled up. Paintballs are gelatin capsules filed with nontoxic, water-soluble dye and shot from a special compressed-gas-powered marker or gun. At normal velocities (up to 300 feet per second), paintballs break on impact. They can strike a wolf with enough force to frighten it and possibly bruise it. Rubber bullets are bullets made of, or coated with, rubber. Fired at short range rubber bullets can be lethal and are often heavy enough to pierce skin even at proper ranges.

Nonlethal ammunition can inflict serious injuries if it is used improperly, so it is important to learn how to use it and to understand the specific conditions under which the various types can be safely and legally used. You may also need a permit to use it. The necessary training, equipment and permits are available from federal and state agents who specialize in wolf management.

In the northern Rockies wolf reintroduction areas in Idaho, Montana and Wyoming, the U.S. Fish and Wildlife Service has issued more than 200 nonlethal ammunition permits to livestock managers. There have been few reports of wolves hit and no reports of permanent injuries. (A grizzly bear in Yellowstone National Park did die from injuries received while being hazed with cracker shells, so it is critical to get proper training to learn to use nonlethal ammunition safely.)

Important factors to consider

RAG boxes

RAG boxes can be very effective. These scare devices "fire" strobe lights and alarm sounds when triggered by the radio signals from an approaching radio-collared wolf. To keep wolves from getting used to any one sound, RAG boxes produce a variety of alternating sounds, which can range from sirens to gunshots to beating helicopter blades to cowboys yelling on horseback. However, wolves may lose their fear of these devices if exposed to them repeatedly. The RAG box is most effective as a temporary deterrent.

Studies by the U.S.D.A. Wildlife Services and the University of Nebraska found that RAG boxes are most effective for small pastures (60 acres or less), especially when lambing or calving is taking place in smaller enclosures. With a range of up to 300 meters, the boxes are not designed to protect cattle in large, open-range ranching operations, except in certain situations where cattle are bunched during calving time or corralled at night.

CASE STUDY: SHOCK COLLARS AND WISCONSIN WOLF PACKS

In 2005 and 2006, Central Michigan University researchers placed a shock-radio combination collar with a battery life of 80 days on each of 10 "treatment wolves" and four "control wolves," all from separate wolf packs in northern Wisconsin.

The researchers lured these wolves to sites within their territories with road-killed deer delivered every three days. Once the wolves were accustomed to visiting these bait sites, a remote-delivery shock transmitter was set up at the sites used by the treatment wolves. Each time a treatment wolf approached the site, it would receive a shock through its collar.

After 40 days, the researchers turned off the system and monitored the wolves for another 40 days. They found that shock-collared wolves visited bait sites much less frequently than the control wolves that did not receive any shocks.

Significantly fewer wolves within the treatment packs, even those not wearing shock collars, visited the sites as well, which suggests that the other wolves may have learned to avoid the sites. The treatment wolves also showed signs of aversive conditioning. From the time of the last shock, treatment wolves and pack members avoided returning to the site for an average of 42 days, whereas control wolves returned an average of five days after the previous visit.

Two farms within the territories of shock-collared wolf packs were also fitted with this technology in 2005. No radio-collared wolves from the study packs visited these farms.

The use of shock collars continues to look promising in some situations, but requires further study.

The RAG box can be effective both as a device to interfere with wolf behavior and as an alarm system that can alert nearby range riders or herders, who can then look for wolves, check livestock and employ additional scare tactics, such as firing cracker shells in the air, if necessary. Since the RAG box's internal computer can record the number of times the box has been activated and which radio-collared wolf has triggered the device, this can give you valuable information on wolf activity in the immediate area.

One limitation of the RAG box is that it will work only with radio-collared wolves. Another is that RAG boxes require care when installing, including protecting the unit from curious cows or other animals that may want to pull it apart. The receiver is often positioned on a fence post and tied down. The two loudspeakers are also fixed onto nearby fence posts. Power is supplied to the RAG box either through a 12-volt car battery, which needs to be charged every couple of weeks, or through a solar panel that recharges itself. Training is necessary to learn how to operate the receiver, and the RAG box system is also initially expensive due to the cost of assembly. However, some agencies and Defenders of Wildlife may have RAG box units available for loan.

RAG boxes have helped resolve conflicts with wolves on many livestock operations, but sometimes the method fails to provide the desired protection. This is usually because the wolves have gotten used to the devices and are no longer intimidated, a situation that can be addressed by changing the design of the device or the way it is used.

A radio collar like the one this Yellowstone wolf wears is required to set off a RAG box. Signals from the collar trigger the device to emit sound and light to scare wolves away.

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Shock collars

The use of shock collars is limited by the time and expense involved. Agency experts have to trap and collar a wolf to fit it with the collar and assist with installing and maintaining the remote shock transmitter devices at the farm site.

Nonlethal ammunition

Training by agency staff knowledgeable about nonlethal ammunition—cracker shells, rubber bullets, bean bag shells and paint balls—is a must because of the safety and legal issues associated with their use. Cracker shells, for example, can start wildfires, and, although low, there is the risk of seriously injuring or killing wildlife if nonlethal ammunition is used improperly. Moreover, depending on what part of the country you are in and what protections are in place for wolves in your region, using nonlethal ammunition on wolves may or may not be legal. (See the Resource Directory to find an agency expert in your state.) ■

Nonlethal ammunition, such as rubber bullets (left) and beanbag shells (right), is designed to strike an animal and scare rather than harm it.

PHOTO: NOAA

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KEY POINTS: Scare Tools and Tactics

- Alarm systems, shock collars and nonlethal ammunition can be effective tools for scaring wolves away from livestock and alerting livestock managers to the presence of wolves.
- Alarm systems known as RAG (radio-activated guard) boxes emit loud sounds and flashing lights to discourage wolves from approaching livestock.
- Shock collars have had limited experimental use but have demonstrated effectiveness in causing wolves to avoid specific sites in the few studies conducted so far.
- Nonlethal ammunition either makes an explosive sound to scare wolves away (cracker shells) or strikes the animal with just enough force to frighten it (beanbag shells, rubber bullets and paintballs).
- The use of alarm systems, shock collars or nonlethal ammunition may require a permit.

7. Switching Grazing Sites

Proactive measures cannot always be implemented quickly or effectively enough to prevent livestock losses. In such cases—and usually as a last resort—moving livestock to an alternative grazing site can be the best solution for livestock owners and wildlife managers alike.

These relocations can be temporary (especially on private land) or, if the grazing permittee is willing, involve permanent retirement of a grazing allotment. Some wildlife conservation groups or land trusts have purchased grazing permits from livestock owners on a voluntary basis to stop chronic conflict and lethal wolf control. This approach has enabled ranchers to continue raising livestock in other areas where opportunities for conflict are minimal.

If you do not have access to an alternative site where your livestock can graze, you may be frustrated by what seems to be a lack of options. More and more, however, a potential solution and a cooperative agreement may be just a phone call and a brainstorming session away.

Important factors to consider

Cooperative agreements to temporarily switch or permanently retire grazing allotments can help reduce livestock-predator conflicts and provide benefits to other wildlife species such as elk and deer. Critics may dismiss these approaches as promoting wolves over livestock on public lands and changing the mission of land-management agencies. Consequently, you may be concerned about your neighbors' reactions should you adopt these methods. However, there are many examples of ranchers, conservationists and agency officials successfully working together to adjust the timing and location of allotments to minimize conflicts with wildlife and allow livestock grazing activities to continue. In some cases, conservation organizations have paid the ranchers for additional costs associated with relocating livestock to safer pastures. In the case of permanent grazing allotment retirement, it may be beneficial to consider examples where willing ranchers received payment for the value of their public grazing permits in high-conflict areas and then used the funds to lease or purchase new pastures in other areas where losses from predators were less likely.

Another potential issue is that retiring a single allotment in an area where livestock grazing is widespread may not solve the problem, in part because wolves have large home ranges. Also, in situations where most of the losses are occurring on private land, retiring a public grazing site may not be an effective solution.

Livestock relocations may not have to be permanent. Predator-caused livestock losses most often occur during times when livestock are most vulnerable—during calving or lambing, for example, or when grazing near a wolf den site in spring when the wolves have pups to feed. In such instances, a temporary move such as shifting calving and lambing activities closer to the barnyard to allow for additional monitoring is the answer. Wolf-livestock experts in your region (see Resource Directory) can evaluate your specific situation and help you find the best solution. ■

Sheep move through a grazing allotment in Idaho's Sawtooth National Forest.

KEY POINTS: Switching Grazing Sites

- When there are no other options, moving livestock to an alternative grazing location to avoid conflicts with wolves can be a win-win solution.
- Switching grazing sites may only have to be done temporarily, for instance, to avoid conflicts with wolves that have young pups to feed or to avoid having vulnerable young livestock near wolves.
- Switching to alternative grazing sites can be challenging because of the logistics of the move, the expense and the viewpoints of all involved. However, it can also be an opportunity to bring people together to jointly find a solution that helps the producer, the livestock and the wolves.

8. Other Methods Worth Considering

You may have heard of other methods used by operators to prevent wolf-livestock conflicts. Most accounts of these efforts are anecdotal and involve approaches not yet scientifically analyzed or compared. Conditions vary for each operation, which can impact the effectiveness of these approaches. Other methods may come to light as operators, government agencies and others work to reduce conflicts between livestock and predators. Defenders of Wildlife looks forward to collecting data on these methods and helping to evaluate them as they are developed in the field. A few examples of promising approaches used by some livestock operations are highlighted below.

Aggressive livestock breeds

Some operators include longhorn steers in their herds, particularly among yearlings, as they are known to discourage predators by aggressively charging at them. Other breeds of cattle such as Corrientes and Brahman show similar behavior and may be a good choice in predator-occupied areas. Brahman also have superior maternal instincts, which can help protect calves during periods of vulnerability. Brahmans have been crossed with Angus and Herefords to produce Brangus and Brafords, breeds that exhibit a desirable blend of aggression toward predators, mothering skills, heartiness, beef value and reproductive success.

Aggressive livestock may pose an increased risk to recreationists on public land, however, a concern that must be addressed when choosing breeds. Specialty markets, such as providing roping steers and other rodeo stock, may provide opportunities for producers to reduce financial losses when switching from a "meat-producing" breed to a less profitable (meat-market wise) but hardier breed.

Brahman cattle are known for their aggressive nature and maternal instincts, desirable traits in livestock that graze where predators roam.

© DANITA DELIMONT/ALAMY

© JIM PISSOT/DEFENDERS OF WILDLIFE

A longhorn steer will charge at wolves and other predators when they approach.

"Mountain-savvy" versus "naïve" cows

Ranch managers in southwestern Alberta have noticed that cows familiar with mountain and foothill grazing conditions are less vulnerable to wolves than cows raised on prairie pastures and moved seasonally to mountain pastures in wolf territories. Similarly, ranchers who regularly transported naïve, pregnant cows from prairie pastures to the rugged mountains of New Mexico's Gila National Forest reported high rates of livestock losses.

In these instances, the cow's unfamiliarity with the new landscape and lack of maternal experience likely contributed to high calf mortality as opportunistic wolves moved in quickly to take advantage of the situation.

Herding for deterrence

Various herding and stewardship methods may play a role in discouraging wolf attacks on livestock. For example, the bunching-up encouraged by the methods of the Bud Williams Stockmanship School and other programs could make cows less vulnerable to wolves. This is based on the idea that herding is the natural defense of ungulates (hoofed animals) threatened by pack-hunting predators such as wolves. It is much more difficult and risky for wolves to isolate an animal from a herd than to pursue individual animals dispersed across the landscape. Put another way, there is strength in numbers. Other claimed advantages of stewardship methods, including easier herding and roundup, provide additional benefits to ranchers.

Calving strategies

In areas where year-round livestock grazing is possible, calving can occur throughout the year, often in locations that are difficult to monitor. In predator-occupied areas it may be helpful to schedule and manage for a condensed calving season to better monitor calving activities. Not only can this reduce predator conflicts when livestock are most vulnerable, but, according to some ranchers, can also help address other problems such as calving complications and accounting of herd numbers.

In other regions of the world, ranching neighbors often plan and set up "calving camps" to help one another by sharing labor and resources during this critical time. In addition to deterring predator losses, calving camps can help 1) increase calf delivery success by assisting cows and heifers having problems; 2) detect and treat sickness; 3)oversee 36-hour weaning for re-breeding of females; 4) supplement the feeding of calves during drought; and 5) tame calves. Another benefit of planned calving is that it allows ranchers to conduct calving activities in easily monitored locations with minimal predator conflicts. Some ranchers report increasing their success during calving season by keeping bulls as part of the calving herd and allowing other aggressive animals, such as donkeys, to mingle with the herd. ■

KEY POINTS: Other Methods Worth Considering

- Livestock breeds demonstrate different levels of aggression toward predators and varying mothering skill levels, both of which can affect the ability of the breed to ward off wolves.
- Whether cow-calf pairs or yearlings are less vulnerable to wolf attacks is an open question. Results have varied in different regions and multiple factors may be involved.
- Cattle experienced with rugged mountain terrain seem to be less vulnerable to wolf attacks than naïve cattle transported to such terrain from prairie pastures.
- Herding and stewardship methods that cause cattle to bunch up may make them less vulnerable to wolf attacks.
- Planning and managing calving for condensed seasons, sharing labor and resources with neighbors, or scheduling calving for a time when wolf pups have other young wild prey to test are some strategies that may help reduce predator conflicts.

COW-CALF PAIRS VS. YEARLINGS

Ranchers in the United States and Canada have noted differences in the relative vulnerability to wolf attacks of yearlings versus cow-calf pairs. Based on the livestock compensation data collected over the last 20 years in the northern U.S. Rockies, for example, wolves have killed calves far more frequently than any other age group of cattle. In Canada, however, yearlings appear to be more prone to wolf attacks under certain circumstances.

Many ranchers graze yearlings because these younger animals will actively seek grass in less accessible portions of the range. As they range more widely across pastures, yearlings become vulnerable to wolves. They also tend to investigate novel sights and sounds, even to their own peril.

In Alberta, cow-calf pairs tend to bunch up in response to an approaching predator, and mother cows have been known to stand and protect their calves. In the northern U.S. Rockies, however, converting from yearlings to cow-calf pairs has resulted in increased losses. Some of the ranchers who converted experienced wolf attacks on their livestock for the first time.

More monitoring and research are needed to better understand the reasons for these regional differences. Factors such as the type of landscape, size of allotment pasture, breed, instinct and experience with predators may all play a role in determining whether yearlings or cow-calf pairs fare better against wolves in any given situation.

Cow-calf pairs may fare better against predators in some regions; in others, grazing yearlings keeps losses down.

Resource Directory

State, tribal and federal agencies and other sources of information and assistance in the United States, Canada and Mexico

ARIZONA

Mexican Wolf Interagency Wolf Field Team: 928.339.4329
Arizona Game and Fish Department
(Pinetop office): 928.367.4281
U.S. Fish and Wildlife Service: 505.761.4783
White Mountain Apache Tribe, Wildlife and
Outdoor Recreation: 928.338.4385
U.S.D.A. Wildlife Services: 602.870.2081
U.S. Forest Service: 928.333.6265

To report a dead wolf or possible illegal activities involving wolves:
U.S. Fish and Wildlife Service, Office of Law Enforcement:
505.346.7828 or 928.339.4232 (Alpine office)

For information about proactive, nonlethal methods and livestock compensation resources:
Defenders of Wildlife (Tucson office): 520.623.9653

COLORADO

Colorado Division of Wildlife: 303.297.1192
U.S. Fish and Wildlife Service: 303.236.7905

For information about proactive, nonlethal methods and livestock compensation resources:
Defenders of Wildlife (Boise office): 208.424.9385

To report a dead wolf or possible illegal activities involving wolves:
U.S. Fish and Wildlife Service, Office of
Law Enforcement: 720.981-2777

IDAHO

Idaho Fish and Game (Ask for the wolf management specialist.)
Boise: 208.334.2920
Salmon: 208.756.2271
Nampa: 208.465.8465
Nez Perce Tribal Wolf Program: 208.634.1061
U.S. Fish and Wildlife Service: 208.378.5243

To report livestock depredations or for federal assistance with nonlethal deterrents:
U.S.D.A. Wildlife Services: 208.378.5077

For information about proactive, nonlethal methods and livestock compensation resources:
Defenders of Wildlife (Boise office): 208.424.9385

To file for livestock compensation from the state:
Idaho Supplemental Wolf Compensation Program: 208.334.2189, ext.11, or e-mail jallen@osc.idaho.gov (report form online at http://species.idaho.gov/pdf/Claim_for_wolf_Depredation_Losses.pdf)

To report a dead wolf or possible illegal activities involving wolves:
U.S. Fish and Wildlife Service, Office of
Law Enforcement: 208.378.5333

MICHIGAN

For information on reducing predator-livestock conflicts, the state wolf compensation program and wolf management in general:
Michigan Department of Natural Resources
wolf coordinator: 906.228.6561.

For information about proactive, nonlethal methods:
Defenders of Wildlife (national office): 202.682.9400

For information about husbandry practices to prevent conflicts:
Michigan State University Extension: 906.228.4830
(regional office); 906.439.5880 (Upper Peninsula office)
Michigan Department of Agriculture: 906.786.5462
(Escanaba); 800.292.3939 (Lansing).

To report livestock losses, a dead wolf on your property or possible illegal activities involving wolves:
Michigan Department of Natural Resources: 800.292.7800

MINNESOTA

Minnesota Department of Natural Resources: 651.295.5175.

To report suspected livestock depredation, a dead wolf on your property or possible illegal activities involving wolves:
Local state conservation officer: See directory at http://files.dnr.state.mn.us/enforcement/phonedirectory.pdf)
or call Minnesota Department of Natural Resources
Information Center: 651.296.6157 (in-state);
888.646.6367 (out-of state), your county sheriff's office
or U.S.D.A. Wildlife Services: 218.327.3350.

For information on state compensation for verified livestock depredation:
Minnesota Department of Agriculture: 651.201.6578

For information about proactive, nonlethal methods:
Defenders of Wildlife (national office): 202.682.9400

MONTANA

Montana Fish, Wildlife and Parks (Ask for the wolf management specialist.):
- Helena: 406.444.3242
- Bozeman: 406.994.6371
- Dillon: 406.683.2287
- Kalispell: 406.751.4586
- Red Lodge: 406.446.0106
- Turner Endangered Species Fund Volunteer: 406.556.8514

U.S. Fish and Wildlife Service: 406.449.5225

To report livestock depredations or for federal assistance with nonlethal deterrents:
U.S.D.A. Wildlife Services: 406.657.6464

For information about proactive, nonlethal methods and livestock compensation resources:
Defenders of Wildlife (Boise office): 208.424.9385

To report a dead wolf or possible illegal activities involving wolves:
U.S. Fish and Wildlife Service, Office of Law Enforcement: 307.261.6365

NEW MEXICO

Mexican Wolf Interagency Wolf Field Team: 928.339.4329
New Mexico Department of Game and Fish: 505.476.8118
U.S. Fish and Wildlife Service: 505.761.4748
U.S.D.A. Wildlife Services: 505.527.6980
U.S. Forest Service: 505.842.3194

To report a dead wolf or possible illegal activities involving wolves:
U.S. Fish and Wildlife Service, Office of Law Enforcement: 505.346.7828

For information about proactive, nonlethal methods and livestock compensation resources:
Defenders of Wildlife (Tucson office): 520.623.9653

OREGON

To report a dead wolf or possible illegal activities involving wolves:
U.S. Fish and Wildlife Service, Office of Law Enforcement: 503.682.6131

To report wolf sightings or wolf sign:
U.S. Fish and Wildlife Service: 541.786.3282
(toll-free: 1.888.584.9038)
Oregon Department of Fish and Wildlife: 541.963.2138

For information about proactive, nonlethal methods and livestock compensation resources:
Defenders of Wildlife (Boise office): 208.424.9385

UTAH

Utah Division of Wildlife Resources: 801.538.4700
U.S. Fish and Wildlife Service: 801.975.3330

For information about proactive, nonlethal methods and livestock compensation resources:
Defenders of Wildlife (Boise office): 208.424.9385

To report a dead wolf or possible illegal activities involving wolves:
U.S. Fish and Wildlife Service, Office of Law Enforcement: 720.981.2777

WASHINGTON

To report a dead wolf or possible illegal activities involving wolves:
U.S. Fish and Wildlife Service, Office of Law Enforcement: 425.883.8122

To report wolf sightings or wolf sign:
U.S. Fish and Wildlife Service
- Eastern Washington: 509.891.6839
- Western Washington: 360.753.9440

Wolf Reporting Hotline: 1.888.584.9038

For information about proactive, nonlethal methods and livestock compensation resources:
Defenders of Wildlife (Boise office): 208.424.9385

WISCONSIN

For information about wolf management:
Wisconsin Department of Natural Resources: 715.762.1363.

To report livestock depredations or for federal assistance with nonlethal deterrents:
U.S.D.A. Wildlife Services:
- Northern Wisconsin: 800.228.1368 (715.369.5221 out of state)
- Southern and Central Wisconsin: 800.433.0663 (920.324.4514 out of state)

For information about the state wolf compensation program:
Wisconsin Department of Natural Resources:
715.762.1363 or 608.267.7507.

To report a dead wolf that appears to have been killed illegally or to have died from an unknown cause:
Call a Wisconsin conservation warden, your local sheriff or Wisconsin Department of Natural Resources tip line: 1.800.TIP.WDNR (1.800.847.9367). If no illegal activity appears to be involved, contact a Department of Natural Resources biologist.

For information about proactive, nonlethal methods:
Defenders of Wildlife (national office): 202.682.9400

WYOMING

U.S. Fish and Wildlife Service: 307.330.5631
Wyoming Game and Fish: 307.777.4600

To report livestock depredations or for federal assistance with nonlethal deterrents:
U.S.D.A. Wildlife Services: 307.261.5336
(Toll free: 1.866.487.3297)

To report a dead wolf or possible illegal activities involving wolves:
U.S. Fish and Wildlife Service, Office of Law Enforcement: 307.261.6365

For information about proactive, nonlethal methods and livestock compensation resources:
Defenders of Wildlife (Boise office): 208.424.9385
Wyoming Game and Fish: 307.777.4600

CANADA

Wildlife Management Branch, Alberta Ministry of Sustainable Resource Development: http://www.srd.gov.ab.ca/; http://www.srd.gov.ab.ca/fishwildlife/wildlifeinalberta/wolvesalberta/

Fish and Wildlife Branch, British Columbia Ministry of Environment: 250.387.9711; http://www.env.gov.bc.ca/fw/

To report a dead wolf or possible illegal activities involving wolves:
Wildlife Management Branch, Alberta Ministry of Sustainable Resource Development: 780.427.9503 or 780.944.0313
Defenders of Wildlife (Alberta office): 403.678.0016
http://www.defenders.org/programs_and_policy/wildlife_conservation/imperiled_species/wolves/wolf_recovery_efforts/canada_wolves/in_the_field.php
Alberta Report A Poacher (RAP) Program: 800.642.3800

For information on compensation and predation management:
British Columbia Cattlemen's Association (administers provincial compensation and predation management program): 250.573.3611; http://www.cattlemen.bc.ca/wplccp.htm
Defenders of Wildlife (Alberta Office): 403.678.0016

MEXICO

Mexican Wolf Interagency Wolf Field Team: 928.339.4329
Defenders of Wildlife
- Tucson office: 520.623.9653
- Mexico office: 52.55.55.96.21.08

Sonora and Chihuahua Naturalia, Hermosillo: 52.662.262.11.70

To report a dead wolf or possible illegal activities involving wolves:
U.S. Fish and Wildlife Service, Office of Law Enforcement (New Mexico): 505.346.7828
Defenders of Wildlife: 520.623.9653

Useful Web Sites

PROACTIVE PROGRAMS

Defenders of Wildlife:
- http://www.coexistingwithcarnivores.org
- http://www.idahowolves.org
- http://www.wyomingwolves.org
- http://www.montanawolves.org

Keystone Conservation Trust: http://www.keystoneconservation.org/
Greater Yellowstone Coalition: http://www.greateryellowstone.org/

GENERAL INFORMATION

U.S. Fish and Wildlife Service
- Endangered Species Program: http://endangered.fws.gov/
- Wolf Recovery Program: http://westerngraywolf.fws.gov/
- Western Great Lakes Wolf Recovery Program: http://www.fws.gov/midwest/wolf/
- Mexican Gray Wolf Recovery Program: http://www.fws.gov/southwest/es/mexicanwolf/

U.S.D.A. Wildlife Services: http://www.aphis.usda.gov/ws/
National agricultural statistics (and links to state data):
- http://usda.mannlib.cornell.edu/reports/nassr/livestock/

National Wildlife Research Center:
- http://www.aphis.usda.gov/ws/nwrc/

Nez Perce Tribe Wildlife Program:
- http://www.nezperce.org/Programs/wildlife_program.htm

State wildlife agencies: http://www.fws.gov/offices/statelinks.html
Yellowstone National Park wolf restoration and pack data:
- http://www.nps.gov/yell/nature/animals/wolf/wolfrest.html
- http://www.nps.gov/yell/nature/animals/wolf/wolfup.html

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