

# Stockmanship and Livestock Predation Mitigation

by Hilary Zaranek\*

Predation mitigation on livestock is an important issue in certain areas of the country. The area where I live and ranch, in Southwest Montana, very near Yellowstone National Park, has one of the largest populations of grizzly bears and wolves in the lower 48 states. Conventionally, control measures for depredation on livestock by large carnivores involves lethal removal of problem animals, either through trapping or direct reduction (shooting). For the past 4 years I have been actively involved in exploring the role of stockmanship in changing the behavior of livestock to minimize conflicts between these carnivores and livestock.<sup>1</sup>

What follows is a summary of what I have learned about the role of stockmanship in predation mitigation on livestock told mostly through on-the-ground observations and experiences. This is a difficult topic to study—especially with grizzly bears—because when we do have conflicts we either have not had enough information on how cattle were handled, or there are too many variables to sort out the impact that just one variable had in preventing or allowing for the conflicts to occur. Therefore, most of the discussion and stories that follow are about wolves and cattle.

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## **FOLLOWING THE BISON: LEARNING FROM THE PAST TO CREATE OUR FUTURE**

For centuries past bison roamed much of North America. The near elimination of bison in the late nineteenth century removed the most abundant ungulate prey of wolves in North America in both biomass and in numbers. Up to 60 million bison may have existed on the grasslands and plains (Roe 1951), although Native American hunting may have kept bison numbers below carrying capacity, closer to 10-15 million (Shaw 1975). It is estimated that bison supported 200,000 wolves prior to European contact. Nowhere else in the world has there been such a concentration of prey and wolves (Van Ballenberghe et al. 1975). Today, bison have largely been replaced by cattle and other domestic herbivores but still exist in some parks and preserves around the continent. Wolves were eliminated, but then re-introduced onto the Western landscape of the United States, leaving us a few small places where we are allowed a glimpse back into what this dynamic and unique relationship between predator and prey may have looked like. By observing and learning from this relationship today, we are given the blueprint for how to manage cattle on a landscape once again rich with predators. Through certain management practices, humans can help re-create in cattle the natural defenses bison evolved to protect themselves from wolves.

For ranchers living just a few miles from Yellowstone National Park, once wolves were reintroduced into the Park it took less than a year for them to disperse northward into our ranch country. Shortly after wolves were seen on

these ranches, depredations on cattle and sheep occurred and the challenge of living alongside these predators began. During the 15 years following wolf reintroduction, the only tools we had to address these new challenges were either lethal removal or tolerance of their presence.

Since neither approach actually addressed the issue of wolves killing livestock, we recently began to take a more proactive and interactive approach to ranch and livestock management for the sake of minimizing livestock losses due to predation. To do this we designed a project based on the defense strategies of bison and the hunting behavior of wolves (and grizzly bears). The main tool we decided to implement was range riding. The goal of the rider was to do two things: (1) increase human presence around cattle, and (2) handle cattle in a way that re-kindles the herd instinct by using low-stress stockmanship. Unlike more common range rider projects that focus on following collared predators and alerting ranchers when they are near cattle (nothing wrong with this), our program focuses on the cattle. Because wolves are wild and therefore unable to be controlled by us (much to our dismay), it seemed to make more sense to invest in the component that we can control—the cattle.

Although the results of our efforts are not organized in any scientific form, they are promising enough to continue. To date, since the range rider program has begun in 2013, we have had no depredations by wolves in herds that riders have kept well gathered and have had a consistent human presence. For the duration of the project we have had a growing wolf population throughout the community.

*(The efforts of this work are intended to stop conflicts from happening. They have not been tested in situations where wolves [and other predators] have become habituated to killing livestock. In all of the examples that follow we are dealing with predators who primarily seek wild prey, and we are working to prevent them from beginning to*

*kill cattle. [In one case these methods were tested when a predator (a grizzly bear) became habituated to killing cattle. In this circumstance there was nothing more we could do to stop the bear from continuing to killing cattle. ])*

## **WOLF AND GRIZZLY BEAR HUNTING BEHAVIOR**

In order to understand why we are doing what we do, and why it works (so far), it is important to understand the hunting behavior of wolves and grizzly bears. Wolves are generalist carnivores that hunt a wide range of prey from snowshoe hare up to moose and muskox. On occasion, wolves will also scavenge on carcasses but tend to depend on hunting their prey the majority of the time. As omnivores, grizzly bears are more versatile as their food sources reflect the season and chance opportunity. Scavenging and usurping carcasses from other predators, like wolves, are also a significant food source for grizzlies.

As hunters, wolves are exceptional at exploiting weakness in their prey, thus allowing them to make quick and effective decisions on the worthwhileness of continuing a hunt. Since most prey are potentially dangerous to wolves, calculating the potential risk versus gain is important (Mech and Peterson 2003, 131). Wolves frequently abandon attacks when the risk is too high. Hunting success is largely based on both the wolves' ability to access vulnerability and their ability to get their prey on the run. Since prey animals are more dangerous to wolves when standing their ground, wolves work hard to get their prey running (Carbyn et al. 1993 and MacNulty 2002). Running allows wolves to seek out vulnerability more easily, separate the most vulnerable individual, and safely attack it with the lowest risk to the wolf.

Being driven primarily by their stomach, grizzly bears are more likely to make decisions based on the potential gain than on risk, making them very hard to convince otherwise once they have had success with a particular food

source. Because bears are so versatile when it comes to food, they are always searching for food but not necessarily hunting. When they do hunt, they do so more by stumbling upon the opportunity than by seeking it out, which makes them less predictable when it comes to which prey they might target and when. The sheer size and strength of grizzly bears also makes them less vulnerable to injury and often successful when they do hunt.

In contrast, wolves prefer to hunt on their terms, seeking out desired prey, as opposed to waiting for prey to find them. Therefore, a typical hunt sequence for wolves would follow the general order of (1) locating prey, (2) stalking the prey, (3) encountering the prey, (4) rushing and panicking the prey, and (5) chasing and attacking the prey (Mech, 1970, but cf. MacNulty 2002).

Grizzly bears and wolves also use different strategies for obtaining food at different times of year. For example, in winter when pack cohesion for wolves is high (i.e., the pack is almost always together), hunting together allows them to be more successful at attacking larger prey. In summer, however, pack cohesion is low so it is more likely that one or two wolves will be hunting which limits their success at attacking larger prey (MacNulty et al. 2014). Therefore, during the summer, it is common for wolves to focus on the abundant smaller prey that is available, including young-of-the-year. We believe that because pack cohesion is low in the summer when livestock are out on pasture, and since it is usually a single wolf interacting with a herd of cattle at one time, our chances of protecting cattle from wolf predation are much higher than they would be if a pack of 6-10 wolves were interacting with the cattle at the same time (as they would be in winter).

After emerging from hibernation, it is vital that grizzly bears jumpstart their metabolism with as many calories as they can get. The first food bears often find are carcasses left from the winter. With the onset of early summer

and calving, grizzly bears focus on newborn young-of-the-year until the young are strong enough to run. As summer nears, moths, berries and other plants make up the majority of the bears diet. Finally with hyperphagia (i.e., an abnormally great desire for food) bears become obsessed with consuming as many calories as possible to prepare for winter. Bears especially will seek a diet rich in protein, often meat. There are a number of plants, such as caraway, that also offer bears the calories they need. Where these food sources are available, grizzly bear populations will increase in the fall.

### **CATTLE AS PREY: SCATTERED VERSUS GATHERED HERDS**

A number of factors make prey more or less vulnerable to being found, approached, tested, chased, attacked and killed by wolves. In the case of livestock, and particularly cattle, because humans play such a significant role in their management, humans can also play a role in helping to make cattle less vulnerable to predation.

In many traditional ranch operations, it is thought that the best way to utilize the range is by scattering cattle out across the entire pasture. In addition, conventional cattle handling supports, and sometimes helps create a scattered herd of cattle (i.e., by making the herd an undesirable place to be). In contrast, in a more progressive ranch operation, ranchers are striving for gathered, or concentrated, herds of cattle and often use cattle handling techniques that support and promote cattle working together as a herd. Gathered herds impact the range more closely to the way bison did, and on the progressive ranch, that is thought to be the best way to utilize and improve rangeland health.

From a predation standpoint, we have noticed that gathered cattle seem to be significantly less vulnerable to predation than scattered cattle. We first noticed this in 2010 when my husband and I were intensively grazing a couple hundred first-calf heifers. It was a rainy,

cold September, so it was easy to spot tracks when the wolves came through. For two weeks we tracked wolves, (as many as three at one time) going through our pastures of heifers, yet we never lost a single animal. Meanwhile, the grazing association across the fence was losing so many calves to wolf predation that Wildlife Services lethally removed that entire pack. There was no clear reason why the wolves chose the neighbor's cattle over ours. If anything, we thought it should have been the opposite because we had younger, smaller calves and less experienced mother cattle since they were all new mothers. We came to the conclusion that the reason our cattle were safe and the neighbors were not was because our cattle were gathered in a tight herd while our neighbors were scattered over a few thousand acres.

The anti-predator benefits of herding among wild ungulates are well known (Williams 1966; Hamilton 1971). Some of these benefits include (1) animals having a greater physical defense (i.e., likelihood to stand their ground together), (2) an increase in foraging/vigilance ratio, and (3) the ability to decrease the encounter rate between themselves and predators, all of which are discussed below. We have noticed that these benefits hold true for cattle in a herd as well.

Based on our observations, the tendency for cattle to stand their ground in a herd when approached by predators is likely their best defense strategy against predation. Similar to bison, muskoxen, horses and moose, cattle also depend on their size and aggressiveness for defense against predation. These traits, in combination with cattle working together as a herd, result in a very formidable force against predators. As mentioned above, wolves depend on getting their prey into a run in order to have a chance at successfully and safely attacking. If cattle stand their ground it is less likely that wolves will attack and more likely that they will abandon the hunt. Although we have seen single cows turn and charge wolves in an effort to protect their calf, and succeed at causing the

wolf to lose interest and leave, we also believe that cattle have a higher likelihood of standing their ground than fleeing when they are together with other cattle in a herd.

For example, on several occasions we have observed wolves (usually one or two) coming into contact with a gathered herd of cattle. In each case, the cattle nearest to the wolf—and sometimes wolves—charged the wolf. Usually one mother cow would trot out from the herd toward the wolf, the wolf would turn and trot away and the mother cow would return to the herd just to have another mother cow trot out toward the approaching wolf again. In most cases, within 10 minutes of this, the wolf left the herd. (In some of these cases, a rider chased the wolf, which we believe is a good strategy for deterring wolves from approaching cattle; i.e., whenever they do they get harassed.) We have never observed a scenario where a wolf has caused a gathered herd of cattle to flee. This is not to say it does not happen, however, it appears that it is much less likely for a herd of cattle to flee when encountered by a predator than to stand their ground. [Editor: I once observed a wolf sitting on a hillside howl, and within seconds a group of mother cows came running out of the brush and chased it away.]

In contrast, we have observed wolves traversing the landscape and coming in contact with a lone calf, cow or horse. In all cases that we observed, the response of the lone calf, cow or horse (except in cases when there was a lone cow/calf pair) was to turn and run. When doing so, the wolf responded by chasing the fleeing animal. In one case, a wolf pursued a horse until the horse reached its herd just up the hill and stopped. At that point, the herd of horses began approaching the wolf. The wolf stopped, mingled among the horses, then left. This is a good example of a situation where the likelihood that a lone wolf would seriously pursue a horse is low, however, because the horse responded to the unsuspected presence of the wolf by immediately fleeing, the wolf was triggered to chase

(a genetic fixed-action pattern) even if the likelihood of it successfully attacking the horse was very low. In cases where this scenario plays out with calves instead of horses, the likelihood of the wolf successfully attacking the calf is much higher. It is well known that both bison and muskox calves seek protection from a herd of adults when pursued by predators. In addition, bison and muskoxen calves are most vulnerable to wolves when running (Mech 1988; Carbyn and Trottier 1988). Therefore, this is the scenario we believe results in most of the cattle depredations that occur, (although we have never actually seen a wolf successfully kill a calf because if we are there we intervene). All depredations by wolves that have occurred in the past four to six years were in pastures where cattle were scattered and it is likely that wolves came across an individual animal that fled, as opposed to a herd that stood their ground and were able to protect their most vulnerable (often young calves).

A second benefit to working as a herd is increased forage/vigilance ratio. Because all prey animals spend a large portion of time scanning for predators, the more animals in a herd the less time each individual has to spend scanning and the more time each individual can spend grazing with no increased risk of predation. When the herd is together, one animal can alert all others to danger. However, when alone, it is up to the individual animal to scan for predators and graze. From a cattle producer's point of view, anything that detracts from cattle grazing potentially results in decreased weight gain which is a financial loss to the rancher. Therefore, if cattle are gathered, they can reap the benefits of other animals in the herd watching for predators and spend less time watching themselves and more time grazing.

A third benefit of the herd is decreased encounter rate. By working as a herd, gathered cattle create a larger area (i.e., more cattle-free space) for wolves and other predators to travel through without encountering them. When

scattered across the range, the likelihood of a wolf encountering at least one cow or calf while traversing the landscape is much greater than if all of the cattle are together in one area. Because increasing encounters may likely lead to increased hunting opportunities for wolves, by minimizing the encounter rate by keeping cattle together, we're likely minimizing depredations. Even though a herd of cattle is easier to find than a lone individual, a herd of cattle when found is less vulnerable than the lone individual because of the safety of the herd. Therefore, even if the herd is found, no hunt can occur. Herds of cattle are also easier for wolves to avoid. If wolves know that a herd is located in a certain pasture, they can avoid coming into contact with the cattle while pursuing other prey and traveling through the landscape. Again, fewer encounters likely will lead to fewer depredations.

Another wolf-avoidance strategy that has been documented in wild ungulates that cattle seem to have as well is movement following a wolf attack. In one case bison fled 50 miles after wolves killed a calf in the herd (Carbyn 1997). In several cases following harassment by wolves, although never following a kill, we have noticed a herd of cattle moving as far across a pasture as the fencing would allow. Because cattle are restricted by manmade boundaries, this defense strategy is not useful for cattle in avoiding predators, but it's interesting nonetheless to observe their natural tendency (again, as a herd).

In scattered herds of cattle, when a depredation occurs, we have not noticed a change in the behavior of the rest of the cattle. Surprisingly, it often appears that the majority of the cattle do not know that an attack has happened and appear completely uninfluenced. Whether this is a good thing or a bad thing is debatable. In some cases, because the rest of the cattle are unaware, they also may be unstressed, as opposed to a situation where the entire herd is aware of wolf presence or a wolf attack and therefore all are stressed. However, as



mentioned above, even if cattle are stressed due to wolf presence, in our experience wolf presence has not resulted in a depredation when cattle are gathered. Therefore, it would appear that stressed or not, it is better to be in a herd.

Managing cattle as a gathered herd has tremendous benefits by decreasing their vulnerability to predation and by increasing their ability to defend themselves when encountered by wolves. There are a number of ways one can work to manage cattle as a herd, but to do this effectively and efficiently, they all hinge on good handling or stockmanship.

### **HOW HANDLING CAN RE-KINDLE THE HERD INSTINCT AND DECREASE VULNERABILITY**

A primary premise of mitigating large carnivore predation on livestock is to re-kindle or foster the herd instinct so cattle will stay together as a “gathered herd.” Cattle are prey animals and it was to their evolutionary advantage to stay together in a herd for survival. This instinct is very strong in bison and some breeds of cattle (e.g., Ancient White Park), but may have been diluted through a several hundred years of animal husbandry, selective breeding, and learning (i.e., lack of exposure to predators). Also, and of relevance here, is an understanding that cattle can quickly learn that being in a herd is not a desirable place to be if they are mishandled whenever they are in a herd. Unfortunately, in conventional handling this is often the case. That is, whenever the cattle are in a herd—whether being driven somewhere or worked in the corrals—they are handled so terribly that the herd becomes something to get away from. This, unfortunately, has negative consequences when trying to mitigate predation in carnivore country as described herein.

But through proper stockmanship—meaning the low-stress livestock handling developed by Bud Williams—being in a herd can and should be a comfortable and preferred place for cattle to be. Also, such things as frequent

driving and herding, consolidating the herd at night, settling and placing the cattle at different places in a pasture, all help to reinforce the idea or habit of staying in a herd instead of scattered.

Even though I am relatively new to Bud Williams’s low-stress stockmanship, I have found that even a rudimentary understanding can greatly facilitate re-kindling the herd instinct. Having been raised in Michigan, my experience ranching and working with cattle is only 10 years in the making. However, my husband comes from a multi-generational ranching family who is unique in their naturally gentle approach to livestock handling and management. So it was no surprise that when my husband learned of Bud Williams he was quick to find an opportunity to attend one of his stockmanship schools. From there, my husband has gone on to seek out the very best stockmen/women in the country and learn from them. I in turn have benefited from being married to such a man when it came to learning about handling cattle. I guess at this point I have learned just enough to give it a try, but in no way really know what I am doing. Therefore, what I am going to say comes from the point of view of someone very much at the beginning stages of learning this type of skillful cattle handling. Based on the few years that I have been at it, I would say that one can read about handling cattle all day long—and that is certainly a good start—but to actually be able to do it requires *feel*, and *feel* is something that comes from simply being fully present, observant and doing it.

With that, here are my experiences.

### **POOR HANDLING AND DEPREDACTIONS**

It was May 7, 2013 and it was the first night I began work as a range rider. I headed out on horseback to check, gather and settle the herd of 300 pairs across the road. (Some of these cows had calves as young as two weeks old). The afternoon before, the owner of the cattle had moved them to the next pasture. Being the conventional handler that he is, the owner pressured his cows with dirt bikes and ATVs, moving them at a fast

walk or trot into the next pasture, closed the gate and left. The following evening I found the herd generally together and grazing quietly except for one mother cow. This cow was bawling and pacing the fenceline of the pasture she had been moved from. She did not have a calf with her and it was clear she had not been nursed in a while. So I rode back into the previous pasture just as it was getting dark. Even with the fading light, it didn't take long before I noticed a disturbed area out in front of me. As I rode closer I realized that there was a single adult wolf feeding on a dead calf. I galloped after the wolf and had to work pretty hard to persuade him to leave, at least long enough for me to get a look at the dead calf. After the wolf moved off I circled back and examined the scene. It was clear the calf had been killed from all of the hemorrhaging under the skin. Its back end and insides were almost eaten out. All the signs pointed to a wolf kill.

This story is a great example of how poor handling actually led to the death of this calf. When the owner of the cattle moved his cows, he did not bother (or know any better) to make sure his cattle were paired up first, and then proceeded to pressure the cattle so much that they lost track of their calves and one was left behind. There is a good chance the calf was killed the night following the move (since it is pretty rare for wolves in ranch country to kill cattle in broad daylight, and it was dead and fed upon when I arrived the following evening). This would have been an easy situation to avoid had good handling been used. Unfortunately, this scenario has happened several times since (i.e., moving cows before they are paired and pressuring them too much causing calves to be separated and either stay behind or run back), but we are taking slow steps to change that.

### **WHEN IT ALL WORKS AND WHEN IT DOESN'T**

That year led to many more interesting observations and experiences. The wolves denned on the north side of the road and their

travel routes cut right through a handful of herds of cattle. At some points, while range riding, I was tracking or seeing wolves near cattle almost on a daily basis. So my cattle handling skills were put to the test right from the start. My goal was to keep each herd on the north side well gathered and see if I could protect the cattle by doing so. Although there were more than two herds on that side, the greatest contrast and lessons came from comparing two of the herds. I rode almost every day in each of these two herds and sometimes twice a day, the goal each time being to (1) work on exercise pairing (i.e., teaching the cow and calf to stay together as a pair in response to pressure), and (2) re-kindle the herd instinct so the cattle would want to be together even if I was not there. Herd 1 was located just below the wolf den, but the pasture was relatively open with some aspen groves here and there and a gentle slope up the mountain. Herd 2 was located in more varying terrain with many little bowls, steep slopes, and mixture of forest and open areas. It turned out to be easy enough to keep Herd 1 well gathered. Each morning or evening I would tighten up the herd and, if in the evening, stay with them until they were settled and it was dark. Within a month these cattle rarely were not together and actually required the least amount of my time. When I left them I had a pretty good idea of where I would need to ride the next day to find them. When I found them, the most I would have to do is tighten them up. There were a handful of occasions when I saw wolves interacting with these cattle but we never had a depredation or an unknown death.

I think a large part of the success with this herd had to do with two things: (1) we worked with these cattle for a month before turning them out into the mountains, and (2) ground cover and terrain was in our favor. In order for the strategy of standing ones ground to be effective, cattle and other ungulates require good footing. In order for cattle to stay together as a herd, they appear to need to be able to see each

other. This pasture had both good footing and good visibility, and when combined with good handling that supported a gathered herd, it gave these cows every advantage.

Herd 2 was different. Although the human presence component was the same as with Herd 1, it was less effective. In this herd I had to spend more time to accomplish less. This herd also had the most vulnerable calves (smallest) and the pasture had more challenging ground cover and terrain. Consequently, by halfway through the season I stopped trying to gather these cattle and just rode through checking on as many as I could find. The result was confirmed depredations on calves by wolves along with several missing calves by the fall. With this herd, I could gather them together perfectly, but once I would leave and they would start to drift, a little bunch would disappear down the mountain, far enough to be out of sight of the others, and they would not go back. In this herd the two biggest challenges were that (1) we did not work with these cattle beforehand and they were immediately turned into the mountains, and (2) the ground cover and terrain were very challenging (i.e., decent footing most of the time, but very poor visibility between cattle).

### **FLIGHTY CATTLE**

One season we received a herd of a couple hundred cattle from a lessee that might as well have been a herd of wild antelope for how flighty and wary they were of humans. When they saw us coming on horseback their heads would be up and within a minute they were off. If we were coming on foot they were even more terrified and there was no hope for doing anything with them. The problem was that if they were responding to me this way, likely they were responding the same way to the wolves, and that was exactly what the wolves wanted. So the challenge with this herd to first shrink their flight zone and expand their tolerance for my presence. To do this I tried to follow what I had read about Bud doing with reindeer. Each

time I approached the cattle and they would look at me, I turned and rode away to release the pressure. They would go back to grazing and I would ride in again, only a little closer. After two weeks of doing this, and multiple stampedes (I over-pressured), the cattle were more tolerable. I was now in a position to work with them a little better. By the end, this herd turned out to be just about the best herd I ever got to work with. They were all terrific mothers in terms of being extremely attentive to their calves, and once they stopped running every time they were bothered or worried about something, they turned into the perfect combination of sensitivity and indifference. We had no losses in this herd.

### **YEARLINGS**

The wolves eventually moved to the south side of the road (beginning in late 2013) and have denned in the same spot ever since. The first spring they moved over there we had a herd of long yearlings in the pasture near the den. That year the pack had three yearling wolves along with the adults and new pups. We could see this pasture with binoculars from our house and could easily watch them. These cattle were always very well gathered whether through handling or electric fence. Time after time we would see the yearling wolves come into this pasture of yearling cattle and bed down in or near the loose bunch. After a few minutes a group of yearling cattle would approach the wolves and the wolves would spring up and take off running with the herd of yearlings galloping and bucking after them. We never did see the wolves chase those cows, only the cows chase the wolves!

It doesn't always work out like this. Because of their curiosity and inexperience, yearling cattle can be some of the most vulnerable to attacks by experienced wolves. However, in this case, due to the strong herd component, these cattle had a lot of confidence and really owned their space. The wolves never had a chance.



## **CO-MINGLED HERDS OF ELK AND CATTLE**

In the fall of 2014 a herd of 60-70 elk moved into a pasture with a few hundred two year old steers. These steers were gathered and herded each day all summer and fall and worked very well as a herd. The elk stayed for three days and three nights. On the 4th morning we woke up to find a dead cow elk with wolves feeding about 400 meters down the mountain from the co-mingled herd (that actually was no longer co-mingled, the elk had left). Upon examination we could see that the cow elk had a broken leg that had healed some time ago, identifying her as likely being the most vulnerable. Although we did not see the hunt, we can say with a high degree of certainty that this elk likely was hunted out of the co-mingled herd. The cattle were untouched. Because cattle, when handled to do so, are more likely to stand their ground like bison than run, and elk are more likely to panic and run, we can assume that elk responded to the pressure of the wolves by fleeing which allowed the wolves to take advantage of the vulnerability in the herd.

On another occasion, we stumbled across wolves leaving a kill one morning. After a little exploring we found a dead yearling elk that the wolves had brought down the night before. This elk was almost exactly in the middle of three different gathered herds of cattle. All three herds of cattle were still generally gathered and grazing. Again, we don't know exactly what happened, but it would appear that wolves pursued and hunted this elk among herds of cattle, leaving the cattle unharmed.

## **THE CATTLE-KILLING GRIZZLY**

It was October 2013 and there was a good cover of snow on the ground. At first no one knew what had happened. Did a grizzly kill a cow or did the cow die and the grizzly just scavenge on it? By the third cow death that week, it was becoming clearer that we possibly had a grizzly bear problem. By the 6th and 7th deaths

in two weeks, ranch staff was doing everything from sleeping in a truck in the pasture with the cattle, to playing loud music on boom boxes out in the pasture, to shooting off random rounds of cracker shells, to bringing all of the cattle into the corrals each night to stop the bear from killing again. But nothing helped. After the 9th cow death in only 2 ½ weeks, the ranch decided to ship the cattle to winter pasture early that year.

The following May cattle arrived back at the summer ranch again. Four days later, a 10th yearling steer was killed by a grizzly bear. At that point a trap was set and the bear was caught that night. Following the capture of this 9-year-old male bear, the cattle killing stopped.

The cattle in this situation were Ancient White Park cattle. By nature they have a strong herd instinct and with no help from humans function as a tightly-knit herd. These cattle were being grazed in the lowlands, pastures full of willow and other brush, perfect bear habitat and hunting grounds. Despite good handling and a strong natural instinct to work together as a herd, in this situation ground cover allowed for the grizzly bear to learn and become successful and experienced at killing cattle. Even when the cattle were moved to multiple other pastures (also in low country) it did not take long for the bear to find them. Although handling did not save these cattle, it did allow for the rancher and others involved to be aware of the problem and respond appropriately. In similar cases involving grizzly bears killing cattle, it is more often the case that one finds several old carcasses here and there, missing the opportunity to respond to the situation. By handling the cattle frequently and well, and keeping them together as a herd, the rancher was aware of the situation at the onset, found the carcasses within hours of being killed, and eventually was able to respond effectively.

## **THICK GROUND COVER, STEEP TERRAIN AND SCATTERED CATTLE**

I have only ever found one adult cow that had been attacked by wolves. It is very rare for

wolves to attack or kill adult cattle in the summer just as it is rare for wolves to attack adult bison in the summer. The risk is simply too great in most cases for wolves to have success. However, a number of factors can turn the tables, making the cattle vulnerable and giving the wolf the advantage. In this case, this herd of cattle was in a pasture with very steep terrain and almost completely forested. The herd of 100 pairs was completely scattered throughout the trees and riders were lucky to find groups of three or four cattle together in this pasture. Because the defense strategy of standing ground in part depends on good footing and the presence of a herd (or at least a few other comrades who can really help give confidence), this pasture did not lend itself well to supporting cattle in their defense against wolves. As a result of all of these factors, one adult cow became vulnerable, likely because she was alone and her footing was poor when traveling through forest and downfall trying to escape the wolves. She was attacked, and although she survived, we later put this cow down due to the magnitude of her injuries and chronic infection.

Based on the observations and information we have about bears and conflicts with livestock, we can say that ground cover and terrain, as well as past or current carcass presence, play a significant role in the likelihood of bears depredating on cattle.

When turning a new herd out into a pasture of this type, it would be ideal to work with them in a confined area for a few weeks. The best chance at keeping cattle together in a difficult pasture, keeping track of all of them, and moving them around the pasture will be if they go into that pasture working well as a herd and respond well to good handling.

### **WEIGHT LOSS AND STRESS DUE TO PREDATION**

Continuing the above story, when we gathered this herd in September we came up short many cows and even more calves plus one bull.

The cattle that did make it back were thin and looked more like cattle coming out of a bad winter than cattle coming off of lush, summer mountain pasture. This is the only example I have of weight loss in cattle (and extreme weight loss to be more specific). There were a number of factors at play that influenced this result and it is hard to know which ones, independent from the others, would have caused this result. It is probably more likely that the combination of factors created a tough situation. As stated above, these cattle were in a pasture with rough, steep terrain, thick forest and were rarely together but for little groups here and there. A number of cattle died due to larkspur poisoning earlier in the summer which caused a significant increase in grizzly bear traffic through the area. Grizzly bear scavenging turned into grizzly bear hunting. Although we have pictures on trail cameras of wolves being in this pasture feeding on carcasses, it is hard to know if wolf presence was very significant given the extreme grizzly bear presence. Either way, the terrain and ground cover prevented riders from keeping these cattle working as a herd, making them more vulnerable. The ground cover gave predators an advantage and the combination resulted in both cattle that were clearly very stressed and a significant loss to the cattle owner.

### **WEIGHT GAIN AND WOLF PUPS**

Despite the bad luck of the above situation, I can gladly say that that is the only story we have of this level of stress, weight loss, and predation on cattle. By far, the majority of the herds and majority of the years we have exceptional weight gain on calves and cattle appear calm and content when checked.

For the past few years one ranch has grazed two-year-old cattle for a grass fed beef business. In order for the cattle to make it to the grass fed market and the producer to profit, the cattle need to gain weight daily in the summer. One year these cattle were grazed in pastures surrounding the wolf den, sometimes being

less than 300 straight-line yards from the den. These cattle were worked consistently before being turned out into summer pasture and by the time they were turned out, they were performing well as a herd. Once turned out, they were gathered and handled each day and they worked very well as a herd. These cattle succeeded at having terrific weight gain that summer, averaging 2.5-3 pounds per day in June and 1.9-2.5 pounds per day as the summer went on. All wolves and wolf pups survived as well.

Each year, ranchers report average to good weight gain on calves with both gathered and scattered herds. No herds that have been well gathered have had reports of below average or poor weight gain. When there has been poor weight gain it has always been in scattered herds. In addition, ranchers who have experienced poor conception rates also had scattered herds.

### **STANDING UP TO GRIZZLIES**

Where we live we have a large population of grizzly bears, up to 35 or 40 in the fall. It is common to see the bears near cattle as the bears dig for roots and the cattle graze. Although mostly peaceful, once in a while a bear will make a run at a cow. In one such case a grizzly bear did just this, coming out of the aspens and charging right toward a little group of cattle who were part of a much larger herd just behind them. These cattle were handled well on a daily basis and worked as a very nice herd. In response to the charge of the bear, four cows grouped together and ran at the bear. The bear stopped, turned and ran the opposite direction! The little group of cows followed along with more members of the herd. They chased the bear until they reached the fenceline and could not go any farther.

In another instance, at first light a grizzly bear was digging in an open pasture next to a herd of cattle. The bear was slowly drifting closer to the cattle and as it did, the cattle nearest the bear stopped grazing and were vigilant. The rest of the herd continued grazing. The bear continued drifting closer to the herd, appearing

to be unaware of how close it was getting to the cattle. Once the bear crossed an invisible boundary in the minds of the cattle, the cattle that had been standing vigilant trotted toward the bear, causing it to turn and run away.

### **WOLVES TRAVERSING THE LANDSCAPE**

It was early morning and I was riding down a rocky slope to the herd of cattle just below me. Because of the terrain, I could only see a portion of the herd, but could see the entire expanse of space down the mountain below them. When looking up from navigating the rocky terrain, I noticed that the cattle that I could see were all standing together, vigilant, watching the area just below them. I stopped my horse and began scanning intently through the sagebrush on the opposite side of the cattle from where I was. I then caught sight of two wolves trotting through the brush, not far from the cattle. It wasn't clear if the wolves were interested in the cattle or just passing through. Due to my position there was little I could do but watch. The wolves wove closer to the cattle but never did change their gait or their level of interest or excitement. All cattle that I could see remained together and vigilant until the wolves were past them and continuing on their way. If the wolves had come across one or two cattle instead of a vigilant herd, whether this scenario could have turned into a hunt sequence we will never know. We do know that the cattle were alert, together and stood their ground and that the wolves passed through never advancing upon the cattle or acting aggressive or interested in hunting. This is our goal.

### **A NURSING COW AND THE SCAVENGING WOLF**

On another early morning, I was alerted to trouble when I heard cattle bawling as I cut through the mountains above the herd I was checking. When I arrived on the hill above the herd I could see the majority of the cattle

gathered up with a handful of mother cattle bawling and running about looking for their calves. I then also saw a wolf darting back and forth along the edge of the herd. Nearest to the wolf was a single cow nursing her calf. Neither cow nor calf seemed bothered by the wolf. I chased this wolf off (easily done since as soon as the wolf saw me, it ran), and upon looking back I could see the mother cow still nursing her calf.

These cows all had very young calves and had just been turned out of the calving pasture a few days earlier. These cattle were handled and gathered each morning and evening and worked together as a herd very well when in this pasture. Upon seeing the wolf, it took little time for the majority of cows to find their calves. Once with their calves, they were fairly unconcerned. Their confidence was evident in the fact that not only was the cow nearest the wolf calmly nursing, but several of the other cows were also nursing. Once the wolf was gone, the cattle went back to grazing as though nothing had happened.

Before leaving the pasture I heard a lot of bird activity in the far corner. Upon investigating I found a dead calf that had died that night from causes other than predation. The bird activity must have alerted the nearby wolf. As it tried to cross through the herd to get to the dead calf to scavenge, it was met with a barrier it didn't dare try to cross.

### **EFFECTIVENESS AND EFFICIENCY**

The cattle that worked the best as a herd allowed riders to be more effective and efficient when working with them. For example, if riders knew that a herd had been left in a certain area of a large pasture the evening before, they could ride directly to that area with a high degree of certainty that they would find the cattle generally in that area. In other situations where cattle were not frequently or well handled, riders might spend hours in a pasture just looking for all of the cattle, more likely to miss something injured or sick or alone. In addition, we were

significantly less likely to find carcasses, and more likely to have a number of missing cattle in the fall, in pastures where cattle were scattered. Consequently, in these cases the cause of death for the cow or calf was not able to be determined and appropriate action was not taken. Also, in cases when predators killed cattle, but the carcass was found too late, ranchers could not be compensated for the loss. With multiple herds to check over 10,000s of acres, it was a huge benefit in saving time and accomplishing more when cattle were kept well gathered as a herd.

### **THE IDEAL SCENARIO**

On June 2, 2016 I was concluding an evening ride around 9:30 p.m. when suddenly a single cow elk ran out of the trees across an open hillside. Close behind her was a lone wolf. The elk ran right by a herd of well-gathered cattle, the wolf continuing to chase her. The chase came within 50 yards of the herd of cattle. Neither the elk nor wolf ever broke stride and continued the chase into the trees on the far side of the hill where I lost sight of them. Throughout the entire event, the cattle never moved, although they did acknowledge what was happening by stopping their grazing and observing the chase. Once the wolf and elk were out of sight, the cattle returned to grazing, with only a few animals remaining vigilant. I guess on our landscape, this would be the ideal scenario.

### **CONCLUSION**

All of these accounts are examples of times when handling and herding, or the lack of, seemingly prevented or allowed for wolf depredations to occur on livestock. They are examples of how humans can manage livestock with stockmanship in ways that make cattle less vulnerable to predation, while improving effectiveness and efficiency of the efforts. Based on the best available science, biologists believe that as wolves circulate around their territory and encounter and test prey under various

conditions, they gain information about prey vulnerability to hunting (finding, catching, killing). Through trial and error, the wolves end up with whichever prey they can capture. As ranchers raising “prey,” if we can handle and manage our cattle in ways that make them the less vulnerable option compared to wild prey available, I believe we are on the right track for minimizing livestock loss due to wolf predation. In our experience, the application of low-stress handling in these circumstances has been the foundation to the success we have seen so far.

## REFERENCES

*In addition to the articles and references listed below, most all of my knowledge about wolves shared in this article was generated from the opportunities I have had to work with some of the leading wolf scientists in the world in places that include Yellowstone National Park, Algonquin Provincial Park, areas surrounding Banff National Park and Northern Idaho. The information I provided about grizzly bears is largely a result of living in an area with a high density of bears and working closely with state and government biologists to create circumstances on the landscape where humans and grizzly bears can both thrive.*

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