

Problem #2: Predators are attacking livestock which are on pasture during the summer and early fall.

The Livestock Predation Prevention Pilot Project (2020-23) tested various different ways to prevent predator attacks on Manitoba cattle and sheep operations. This document provides a high-level overview of what we learned after initiating 10 different risk mitigation practices (RMPs) involving more than 109 projects on 46 farms and ranches.

For more in-depth information on each of the individual practices listed below (including photos) you can find them on Manitoba Beef Producers' website at <https://mbbeef.ca/producers/>

This is a list of the most successful management practices that the LPPP found to help avert pasture predation.

GPS Collars to Monitor Livestock

The LPPP purchased three different Global Positioning System (GPS) units that could be used to track livestock locations, behavior, and movement. The concept involves applying a GPS electronic collar or tag to an animal, and receiving the location data on a home computer or on your handheld smartphone wherever the internet can be accessed.

Twelve clients were assigned various GPS products, and all producers saw merit in knowing where their livestock was at any time of day or night. Of the participants, 83% regularly checked their GPS before doing pasture checks, and 78% would repurchase the equipment if it was lost.

Producers utilizing the GPS products typically applied five or less GPS collars or tags to their livestock groups so the coverage of animals was generally 5% or less of the herd, so they were monitoring where the general group was located, rather than where every specific animal was located. The small coverage group was still helpful as locating the herd and driving directly to the herd made wellness checks much easier. For producers with large extensive pastures with bush, hills, swamps, and watercourses, being able to geolocate their herd saved large amounts of time. Wellness checks could be done in minutes rather than hours on large land bases.

Producers were also interested to see where the livestock congregated at night to rest, and during the day to graze. Such behaviors and tendencies can reveal that animals are fleeing certain areas in search of safety such as around a watering hole in an open area, and avoiding deep bush or areas with poor sightlines. Certain parts of the pasture may be avoided entirely due to predator harassment.

Some of the GPS systems also had the function of activity alerts which notify the user when an animal is behaving in an erratic behavior such as fleeing or fighting. One user who had a GPS collar on a donkey had an activity alert and found that the donkey was pursuing a black bear off of the property. While following up on every activity alert would be difficult, perhaps future software enhancements could make activity alerts very useful.

GPS collars also had less predator-centered uses, such as finding out when animals had escaped their fences or paddocks. A final use was to monitor livestock guardian dogs, as some of the tags are small and light enough to mount on dogs to know whether they are on pasture, or away chasing vehicles, or dogs of the opposite sex. Overall producers saw valid uses to GPS monitoring. However, the technology is not yet ready for widescale adoption.

Among the key findings:

- Some GPS systems are only workable in good cell coverage areas so this is a major consideration prior to purchase.

- Some GPS systems are usable anywhere on earth because they communicate with satellites, which is more useful on pasture but often a more costly system.
- Battery power is always a consideration. Some systems can have batteries that last a year or longer, however this makes them heavy and larger, and more prone to damage.
- Solar panels are now available on some models, but long hair, device location, tree cover, length of sunlight, and cloudy conditions can limit solar charging and lack of GPS transmission.
- Robust reliability is still a concern. Both of our cattle-applied systems had at least one plastic case break within the first year, and as such, an expensive item was taken out of service and not fixable. One had a warranty claim, and another did not, as the second unit had no warranty once applied to an animal. Be sure to read the fine print carefully.
- Costs have yet to come down to commercially attractive prices, and most GPS systems cost a minimum of \$400 per animal with some additional fees for service above that. However, if animals can be saved and a small percentage of animals monitored overall can save lives, it can be attractive to try a GPS system.

Overall, GPS systems were interesting and helpful, and part of a predator risk management strategy, but are not a whole solution for livestock predation problems.

Deadstock Composting Pens

These pens were installed and rated by cooperating farms, and all involved agreed that better removal of deadstock was important. Reducing food sources for predators to dine on was a positive move and does not cost as much as you might expect. While this RMP does not directly keep predators out of pastures, it can reduce traffic of scavenger animals such as coyotes and bears. Deadstock is nature's way of inviting predators to your pasture, so if the found deadstock is promptly disposed of, scavenger birds will not be present.

The deadstock composting pens built for the project were made with chain link fence and predator-proof gates and cost about \$2,500 for a 64 x 64 foot pen. Of the producers using pens, 78% said that the smell was either minimal or there was none, and 91% of producers who used them would recommend them to all producers.

Veterinary Assessments

These were tested by several producers. These involved a request for a vet to attend the farm and have a visual assessment and an in-depth conversation about how animal health can be improved. The aim was to have minimal numbers of livestock on pasture with a health issue that might attract predators, be it lameness, pneumonia or scours and cocci or other. Results varied from recommendations to improved vaccination routines and nutritional care, to summer safe pens. Producers who used the assessments agreed that having an extra set of eyes on the herd was positive. And now that producers need a veterinary client patient relationship (VCPR) visit annually, having a vet out during late calving season, or early pasture season is an ideal time to have this evaluation.

Game Cameras

Game cameras were tested by 23 producers, with 83% using cameras which transmitted the photos to the internet for viewing without touching the camera. Of the participants, 73% of them caught predators on the cameras, but most found that camera needed to be moved around to be most useful. Producers with the best experiences used game cameras to determine what predator was present at attack sites, as they could move the cameras into position and monitor which predator came back first.

Some cameras were placed at water sources for monitoring predator activity and for livestock photos. Some producers monitored watering dugouts in fall to find out if there were any lost animals after roundup. Roughly half of the users indicated that the cameras helped with saving animals. We found that producers who wanted to hunt and trap predators found cameras more useful.

Cowbells

Cowbells were tested on six commercial farms during the project. Producers wanted to test the bells to see if predator activity would drop with the erratic ringing of a cow bell. Because of cost and practicality considerations, the bells were applied to about 5% of the herd. In the end, about 50% of users believed that cowbells saved livestock, while one producer believed that the cowbells attracted predators. However, producers did agree that finding cattle on pasture was easier with bells, and some users just enjoyed the sounds of a herd with bells.

The bells purchased were Bevin 4K Kentucky cowbells on nylon neck straps. The bells were robust and lasted their first season with minimal damage. Bells vary in price and the bells as tested were about \$33 with the nylon strap. Less expensive options might be available, but the strength of collar and the quality of bell is important if you are going to use them for multiple years.

Strategies that might improve bell utility would be to affix bells to older slower cows or cows with calves which are recovering as an attack might provoke a loud ringing that brings in other mother cows to defend the weak. Producers liked the cowbells, but mixed results did not indicate any strong predator risk mitigation trends.

Donkeys or Livestock Guardian Dogs

Companion animals on pastures can be helpful to reduce predator attacks. Livestock guardian dogs like the Great Pyrenees breed and others have proven themselves for centuries for sheep and cattle protection. However, in the Manitoba scenario there are many pastures situations where a dog is not appropriate. Dogs need to be fed daily to be able to stay with their herd. While a properly-trained dog will want to stay with its livestock, people need to feed the dogs daily and do wellness checks. While some pastures can be monitored daily, others are impractical and as such guardian dogs are impractical.

Donkeys are another guardian animal that can be useful for livestock guarding. Some donkeys have an inborn instinct to repel predators from their group, and can be very helpful. However not all donkeys behave equally; some are excellent protectors and some are not. Female donkeys are often more protective and appropriate in many cases. Male donkeys can be used in cattle, but not in sheep due to fighting with rams. All donkeys can be fierce fighters and can be dangerous to humans. The result is that the use of donkeys can be good or bad depending on the donkey.

This project did not specifically test livestock guardian animals but we received a lot of comments and recommendations on their value. We did however find that having a GPS collar on a guardian animal is very helpful, especially with dogs who might roam outside of the pasture boundaries.

Predator Management

This project tested multiple mitigation techniques that can reduce predator attacks, but each has its limitations. One aspect that should be considered by producers is some level of trapping and hunting of predators for the protection of property. In Manitoba producers are allowed to remove coyotes, wolves and bears but not cougars in defence of property. Under *The Wildlife Act*, it states, that “the owner or occupier of private land or leased agricultural Crown land, or a person authorized by the owner or occupier, may kill or take any wildlife on the land — other than a moose, caribou, deer, antelope, cougar, elk or game bird — for the purpose of defending or preserving their property... A person who kills or takes any species of wild animal in defence or preservation of his property as provided in subsection (1) shall report the killing or taking to an officer within 10 days thereof.”

Good neighbors can also be an asset when it comes to predation concerns. Some producers agree to alert each other of predator activity and develop an agreed upon trapping strategy. This plan can work well to reduce problem predator risks. Wolf alpha pairs are wolf adults who are raising pups, and if this scenario plays out in

an area of young livestock, the results can be devastating. Producers working together to identify dens and remove pairs early will benefit from reduced wolf kills and attacks. Secondly, when a wolf pup is raised on farmland with livestock as a feed source, it may be far more likely to harass livestock in the future.

Producers need to be aware that pelts taken in summer are valueless, and even prime winter pelts have recently been of low value and it has been difficult to justify the expense of trapping.

Are There Good Predators?

Predators who have not historically or recently harmed your livestock should be left alone, as no harm is better than new predators moving into your pasture. Throughout this project we found there are many interactions that happen in a natural environment. One producer cooperated related a story of being offered free skunk and racoon removal on his farm. He agreed as the intent was to allow for better waterfowl hatch survival. The following year a boom in small rodents ensued, which did not impress the rancher. The year thereafter a boom of coyotes ensued which was met with concern. In late summer, when the small rodents were exhausted, the coyotes had turned to sheep and lamb as a food source. The moral of the story is twofold. First, if the system is working well, don't change it. And second, food supplies dictate the behavior of predator animals. Producers can use this information in their favor when managing their land and planning out courses of action.

Finally, if your operation is subject to livestock losses or injuries due to predators, preserve the carcass and take photos of the loss or injury and contact Manitoba Agricultural Services Corporation (MASC) immediately to submit a claim under the Wildlife Damage Compensation Program for Livestock Predation. Most predator losses are subject to compensation if there is a provable attack. This program is available to all affected producers with no pre-enrolment required or fees involved. Contact your local MASC office for details. See <https://www.masc.mb.ca/masc.nsf/contact.html> Producers with an eligible compensation claim may also be able to access the Problem Predator Removal Program.

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