

Wild Predator Loss Prevention

Best Management Practices for Sheep

A guide for sheep producers on how to minimize predation of sheep



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Wild Predator Loss Prevention Best Management Practices for Sheep Producers

What is a Best Management Practice?

A Best Management Practice can be a process, activity, method or technique. These processes, activities, methods and techniques are generally understood to be more effective in reaching a certain outcome or accomplishing a task than other conventional processes, activities, methods or techniques. Best Management Practices are used in many professions such as construction, technology, ecological protection, sustainable development and health care.

What is a Best Management Practice for Sheep Producers?

A Best Management Practice (BMP) is an approach to livestock production that seeks to minimize predation on a flock while taking into account the surrounding environment, including the wild animals within it. A BMP provides sheep producers with a toolkit of options to assist with the protection of livestock from predation. BMPs go with the idea that it is much easier to take steps to prevent predation than to try to stop it once it has started. These are your “best bets” for keeping your livestock safe. These best management practices fall into 5 categories, and are explained in the following pages. They include:

- ➡ Husbandry Practices
- ➡ Predator Repellants
- ➡ Guardian Animals
- ➡ Fencing
- ➡ Knowing Your Neighbours

The intent of this BMP is not to limit sheep producers, but rather, to provide options for them. It should be understood that every farm is different, and due to physical factors and geographic location, some farms do not have the option to adapt to several of the suggestions listed in this document. Each producer should evaluate his/her situation in terms of what is possible, both realistically, given the layout of their land, and financially. It may be the case that some of the BMPs listed in the following pages are not feasible, and then the producer must know and accept that they have a higher risk of predation, and then take other appropriate steps.

Why should BMPs be applied in livestock/predator interactions?

A farm that reflects BMPs:

- Should experience less loss due to predation by wild predators
- Should increase its ability to be self reliant in managing predator problems responsibly

Some municipal landfills will accept dead livestock. Check with your regional district to see if this could be an option for you.

- Should have a better understanding about its role in the local environment and how it can exist without harmful impacts on the predators in the surrounding area

Limitations

Management practices are an effective tool for protecting livestock. They cannot, however, be expected to prevent *all* predator problems. For minimizing predation, an integrated approach should be used. The most successful programs combine good husbandry with other control methods.

Husbandry Practices

* **Select an appropriate site for pasture**

Pastures that are interrupted by streams, creeks or rivers have a greater risk for predation. Predators like to hunt in places where they can hide. Avoid pastures in thickly vegetated areas. Remove brush and trees in areas where animals are kept.

* **Have defined storage areas at least 200 m away from lambing areas, feeding areas, or corrals**

Farms with old farm equipment, old buildings, sheds and other items randomly located throughout the property provide excellent hiding spots to invite predators, facilitating predation on the flock. Create a defined storage area for these items away from where sheep are kept. If planning on creating a new facility for the sheep, make sure to examine the design so that you are not creating corridors and pathways for predators to conveniently use to get to your flock.

* **Inspect the flock regularly**

Assess the flock's behaviour. Ask yourself: are they more alert? fearful? or scattered into groups? Being aware of your flock's behaviour can help you to detect predator threat and you can then discourage predation before it happens. Periodically change the time of day when the flock is checked to discourage coyotes from learning your patterns and being more likely to kill the livestock. Observe for animals that are experiencing health problems and isolate them since predators will select and prey on the weak, sick or injured.

* **Group the flock**

Bunching up animals makes them less vulnerable to predators. Some predators are far less likely to try to isolate a sheep from the flock than to attack an individual animal which is off by itself. Some breeds lend themselves better to flocking. Choose a breed that best suits your farm environment.

* **Remove dead animals and dispose of them properly**

The smell of dead animals will invite scavengers and predators. Remove carcasses or bury them deeply to lessen the chances of attracting predators and potentially losing even more livestock to them, as many predators will return to a dead animal for feeding once they have discovered it or will seek to prey on the remaining live animals. Leaving dead animals out allows the predators to develop a taste for domestic meat. The dead animals can be buried or composted on the farm where they died. If the dead animals are to be composted, ensure that they are not just placed on top of the manure pile, but buried into it with at least 1 meter of manure on top of the carcass, away from the rest of the flock. If the dead animal is to be buried, also make sure that there is at least 1 meter of soil above the carcass. This 1 meter of soil on top of the carcass will help to

discourage bears from digging to get at the carcass. For both composting and burying, the carcass must be placed at a minimum of 30 meters away from any water source to avoid the possibility of water contamination. For more information about composting, read the B.C. Ministry of Agriculture, Food and Fisheries' "Waste Management Factsheet" found at: <http://www.agf.gov.bc.ca/resmgmt/publist/300Series/384300-2.pdf>

* **Keep records**

Keep track of how many sheep you have, as well as your losses. You should know how many sheep you have because then it is much easier to determine when they go missing. Also, keep track of your losses. Keeping track of losses can help in the facilitation of the control or removal of the problem predator. Further, it can also help to identify the patterns of high predation times or areas.

* **Lamb inside**

The highest predation occurs from late spring through to September/October as coyote packs and other species are providing food to their young. You could change to an autumn lambing program so that the opportunity for coyotes to prey on young livestock can be reduced.

Caution! Winter-born lambs that are raised indoors may also be at risk when they are put out to pasture because they have not learned to be alert or suspicious.

* **Remove the afterbirth from lambing**

Remove all waste, such as afterbirths, that occurs as a result of lambing. The smell of lambing waste can be a strong attractant to predators.

* **Confine sheep at night**

Many predators hunt at night. Move sheep inside at night to reduce the chance of predation.

* **Allow time for lambs to heal from docking and castration before putting them out to pasture/rangeland**

The scent of vulnerable animals can attract predators from miles away. The wounds caused by castration and docking are enough to cause a strong odour that can attract predators. Time these practices so that the lambs can heal before they are released into more remote pastures.

Predator Repellants



Top Photo: Fladry

Middle Photo: Radio Device

Predator repellants are designed to ward off or reduce the attractiveness of specific areas to predators. They can include scents, loud noises, and lights (anything that causes irregular sound, sudden light, or reflection can be temporarily effective). They should be used for high-risk, short-duration predation threats as predators are highly intelligent and quickly become accustomed to them. They are best used in combination with other techniques such as fencing, good husbandry practices, and guardian animals. To discourage predators, try some tools or techniques such as:

- * bells on sheep
- * radios
- * water sprinklers
- * night lighting of corrals
- * motion sensor lighting
- * propane cannons
- * fladry (flagging tape on fencing)
- * parked vehicles in areas where losses have occurred

Guardian Animals

Sheep producers have incorporated many different animals into their herds as a way of protecting their sheep from predators. Some producers have had success pasturing cattle and sheep together because cattle will often form around the flock when a predator approaches. Others have found that keeping horses around the perimeter of their sheep pasture can deter predators. Dogs, llamas and donkeys, however, have been the most frequently noted in literature for their successful use as guardian animals for sheep. Each have their own considerations, costs, pros and cons. Try using a livestock guardian animal to protect your flock from predators.

Comparison of rough costs and life spans of the three most popular guardian animals based upon various journals and websites.¹

Guardian Animal	Life Span	Initial Cost	Subsequent Costs
Dog (of a recognized livestock guardian breed)	working life = maximum 10 years (usually not effective guardians until 2 or 3 years old)	Purchase cost: \$240 to \$1000 1st year cost: \$700-\$900	\$250-\$300 a year
Llama	10-15 years	\$700-\$800	\$90 a year
Donkey	10-25 years (they are most protective between 3-12 years)	\$65-\$250	\$0-\$300 a year

¹ These costs are estimates, and may have increased since the time of these publications. The numbers were taken from various publications: Ontario Ministry of Agriculture, Food and Rural Affairs' "Guidelines for Using Donkeys as Guard Animals with Sheep"; Iowa State University's "Guard Llamas: A part of integrated sheep protection"; California Department of Food and Agriculture's "Choosing a Guard Animal"; Smith, M.E. et al. "Review of Methods to Reduce Livestock Depredation"; USDA's "Livestock Guarding Dogs"; and Smith, M.E. et al. "Review of Methods to Reduce Livestock Depredation." ACTA Agriculture Scandinavia 50 (2000):279-290.

*Dogs

A livestock guardian dog stays with the flock without harming them. They are attentive, trustworthy, and loyal to the flock. The guarding dog should not be confused with a herding dog or a pet. It is a full-time member of the flock. This does not mean that the dog does not still require care and training, and individual dogs and breeds will vary significantly in their effectiveness. Their protective behaviour is largely instinctive, but to form a bond between the dogs and the sheep, the dog must be raised with the sheep from a pup. The longer a dog stays on the farm, the more cost-effective it will be. The purchase price, training costs and ineffective juvenile months of a guardian dog can be gradually written off depending on if the dog demonstrates appropriate guarding behaviour. Guardian dogs should not be expected to be an immediate fix to predation, but in some cases, adding additional trained dogs to a flock can solve a problem immediately.

Steps in choosing, training and maintaining your guardian dogs

1. Select a suitable breed and learn about their pros and cons. Suitable breeds include the Maremma-Abbruzzi, the Akbash, the Kuvasz, the Anatolian Shepherd, the Great Pyrenees and the Komondor. Of the most common guarding dog is the Great Pyrenees. Many producers also use cross bred dogs. Make sure that the parents of the pups have had experience as guardian dogs.
2. From 6-8 weeks, rear the guardian puppies with the sheep in pens. The pens should contain around 3-6 lambs, and if lambs are not available, use sheep that will not be aggressive towards the puppy. Sheep can be rotated through the pen so that the pup is exposed to many sheep. It is important to minimize human contact.
3. Monitor the dog and correct undesirable behaviors (such as chewing on ears, leaving the flock or being too aggressive with the sheep). Never abuse the dogs. Train only the basic commands such as stay, down and come. Do not treat them as a pet dog because they will want to spend more time with you instead of protecting the sheep.
4. Give the puppy a safe place where it can get away from the flock. At times, the size and number of sheep can be frightening to the puppy, so it is good to give the puppy an option for retreating to a place where he/she feels safe.

To get more information, learn about the different kinds of breeds, and to see what breeds are available in B.C., check out these resources!

- Information on breeds
<http://www.sheep101.info/guarddogs.html>
- Australian document containing information about breeds, training dogs, dog management, common problems, and case studies
<http://www.invasiveanimals.com/wp-content/uploads/2010/09/Guardian-Dogs-web.pdf>
- USDA information sheet on guardian dogs
<http://www.nal.usda.gov/awic/companimals/guarddogs/guarddogs.htm>
- Dog Breeders Directory
<http://www.great-pyrenees-for-sale.info/>

Ideally, this safe place should contain its food. Water, however, should be kept with the sheep so that the dog and sheep are forced to mingle.

5. Ensure the dog's health and safety. Make sure not to feed the dog any raw foods. They should get routine dog vaccinations and be de-wormed (for tapeworms) annually, or as advised by your veterinarian. Make sure your flock is not going to frighten or injure your puppy. Keep an eye on them.
6. After the initial socialization period (pup should be at least 16 weeks old), the pup and the sheep it was raised with can be put to pasture with the rest of the flock. Monitor to make sure the sheep do not hurt the pup or that the pup does not flee from the sheep. Still make sure it has an area to go to for retreat. If the dog explores a lot initially, make sure it returns to the sheep within a short period of time. Some producers will keep the dog behind a fence during its life as they can show aggression to humans as well as predators.
7. From April through June (when wolf packs have new pups) keep livestock guarding dogs away from known wolf den sites. During times when pups are young, wolves can be incredibly defensive and aggressive towards the guardian dogs. When wolves work in packs, they can easily lure in a guardian dog to kill it. While guardian dogs can be effective, they are not invincible against wolves, especially as individuals.

*Llamas

Llamas are naturally aggressive towards coyotes and dogs. Even so, they can still be killed by packs of dogs or coyotes.

Considerations

1. Wait until the llamas are at least 18 months of age before placing in pasture with sheep.
2. Use either gelded adult male llamas, non-breeding females or females with crias (baby llamas)
3. Pick llamas that show an awareness and curiosity of their surrounding. Pick a llama that is not aggressive towards humans.
4. Make sure they have shade in the summer and protection from the wind in the winter.
5. Train them to accept a halter.
6. Cut their toenails and get them sheered if needed.
7. De-worm and vaccinate as recommended by your veterinarian.

*Donkeys

Medium to large size donkeys (jennies or geldings) can be used as guardian animals. Through donkeys' dislike and aggression towards dogs, coyotes and foxes, they provide

indirect protection for livestock animals they are with. Donkeys use their good hearing, sense of smell, and vision to detect intruders. Once they have spotted a predator, they will bare their teeth, chase the predator and attempt to kick or bite it. Donkeys are fairly low maintenance because they eat similar diets to grazing animals, though they still require attention such as hoof trimming and routine horse vaccinations and de-worming.

Considerations

1. Choose a medium-sized donkey (not a miniature).
2. Introduce them to stock well before predation is likely to occur because guardian donkeys may need several weeks to adjust to livestock.
3. Donkeys should be put with sheep from birth or from the time of weaning to increase the chances of the donkey bonding with sheep.
4. Place a new donkey on the other side of a common fence line with livestock for about 10 days. This gives the donkey and the livestock an opportunity to safely get to know one another.
5. After the 10 days are up, lead the donkey to the sheep where they can smell each other. Tether the donkey there for about a week. After a week, the flock and donkey should be comfortable with each other.
6. Feed the donkey with the flock so that it feels like it is a part of it.
7. Train them to accept a halter and to lift their feet for trimming.
8. Trim the donkey's feet regularly so the donkey will be able and willing to chase predators.
9. Provide regular vaccination and de-worming as advised by your veterinarian.
10. Use only one donkey at a time with livestock.
11. Keep donkeys away from horses, mules and other donkeys.

Additional Donkey Information

- Alberta's Agri-Facts on protecting livestock with guard donkeys
<http://www.predatorfriendly.org/how-to/how-to-pdf-docs/Protecting%20Livestock%20with%20Guard%20Donkeys,%20Govt.%20of%20Alberta.PDF>
- Ontario's Ministry of Agriculture, Food and Rural Affairs fact sheet on using donkeys as guard animals with sheep
<http://www.omafra.gov.on.ca/english/livestock/sheep/facts/donkey2.htm>
- Online classified for donkeys and horses
<http://www.equinenow.com/>

Fencing

It is easy to feel overwhelmed when trying to figure out the best option for fencing as different farms and range lands require different fencing. Fencing can also be a substantial expenditure on a sheep farm. When trying to determine the best type of fence for you, think about your geographic location, the size of your operation, the cost of the fence, its expected life span, and what type of predators it will keep out. Fences do not have to be elaborate in design. In fact, some of the most effective fences have a simple design. To maximize their effectiveness, fences should also be combined with other deterrents. The first step in making a decision about a predator resistant fence is to determine whether to build a permanent fence, or a portable fence.

Portable or Permanent? →

The size of your operation will largely determine the answer to this question. If you have a small operation, you may want to consider permanent fencing. Permanent predator fencing is not practical for large open range operations. It is too costly to build and maintain. Portable fencing, however, can be a good alternative when permanent fencing is not an option.

Small pasture



Permanent



- The most common permanent predator resistant fencing types are nine-wire, mesh wire and page wire.
- The nine-wire is made with 9 single strands of 12.5 gauge high tensile smooth wire. The wires alternate between being charged and grounded.
- The mesh-wire fence is more expensive than the nine-wire, but it lasts longer and can be stretched longer than the single wire strands. There are several designs available, both charged and non charged.
- Page-wire is made up of horizontal lines of smooth wire, which are held apart by vertical wires. These openings are bigger than those of the mesh-wire.
- If using mesh-wire as a perimeter fence, you can choose not to electrify it, and add barbed or single-strand smooth wire above the mesh with a maximum of 15 cm intervals to increase fence height. Alternatively, a variety of page wire fences are available at various heights and widths.
- Barbed wire or 12.5 gauge charged high tensile wire can be used at ground level to discourage predators digging under the fence.

Large pasture or range



Portable



- Portable fences can be constructed from several different types of materials including multiple electric fencing strands, wire mesh and portable panels.
- Pre constructed fences can also be purchased.
- The sheep may take time to get accustomed to the portable pens.
- These portable fences should be moved every so often to reduce the impact on the native flora and fauna.
- In addition to helping reduce predation, fencing allows you to have greater control of grazing, thereby minimizing the time spent herding sheep to new grazing areas.

After you have made a decision about whether to get a permanent or a portable fence, you should then decide if you would like to electrify it, or not.

Electric or not?



Cold climates, dry climates, and areas with heavy vegetation can require additional maintenance and can reduce the effectiveness of an electric fence.

Before a fence is built, careful planning is required. Remember to:

- choose the most level ground
- avoid putting fences in difficult areas such as creeks or ravines
- clear enough trees and shrubs from the fence line so that the fence can be easily maintained
- avoid top boards, as they create a leverage point for predators to jump over fences

For more detailed information about fence costs, fence materials, and manuals on how to make fences yourself, visit the following websites:

<http://www.sheepandgoat.com/fencing.html>

The fencing section of this website is your best bet for directing you to information that you may need when thinking about predator fencing.

<http://extension.oregonstate.edu/catalog/pdf/pnw/pnw225.pdf>

“Building an Electric Antipredator Fence” is a do-it-yourself manual for electric fences. It was produced by Oregon State University, Washington State University, and the University of Idaho.

http://www.agf.gov.bc.ca/resmgmt/publist/Farm_Structures.htm#livestock_control

B.C. Ministry of Agriculture, Food and Fisheries has several fact sheets about fencing including fence planning, fencing materials, how to build an electric fence for coyote control and a list of materials needed per mile. It includes diagrams and fence designs.

[http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex888?opendocument](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex888?opendocument)

The Government of Alberta’s “Protecting Livestock From Predation With Electric Fences” provides the essential information for mesh-wire and nine-wire fencing.

<http://www.omafra.gov.on.ca/english/livestock/sheep/facts/02-053.htm>

Ontario Ministry of Agriculture, Food and Rural Affairs’ fact sheet on “Fencing for Predator Control provides prices of and comparisons between different fencing.

Knowing Your Neighbours

Make an effort to get to know both your human and non-human neighbours (the predators). Knowing and communicating positively with your human neighbours allows for a greater number of people who can look out for you and your flock. Your surrounding community may be able to teach you a lot. Neighbours may know of movement corridors or dens close to your farm or property, and they can give you a call if they have sighted a predator on their property, or inform you if they have recently experienced any losses.

Knowing your non-human neighbours is also important. Educate yourself about your local predators. Their behavioural habits, their social hierarchies, their range of territory, their breeding seasons, and the time of year when they are with their young can all affect predation of your flock. These are the type of neighbours that you would rather not invite over for dinner. Check out the following websites to learn more about your local neighbourhood predators.

Useful Websites

Cougars

http://www.env.gov.bc.ca/cos/info/wildlife_human_interaction/docs/cougars.html
<http://www.env.gov.bc.ca/wld/documents/cougar.htm>

Wolves

http://www.elp.gov.bc.ca/cos/info/wildlife_human_interaction/docs/wolves.html#predators
http://www.northernlightswildlife.com/wolf_info.html
http://www.env.gov.bc.ca/fw/wildlife/trapping/docs/gray_wolf.pdf

Coyotes

http://www.elp.gov.bc.ca/cos/info/wildlife_human_interaction/docs/coyotes.html
<http://www.env.gov.bc.ca/fw/wildlife/trapping/docs/coyote.pdf>

Bears

http://www.elp.gov.bc.ca/cos/info/wildlife_human_interaction/docs/bears.html
http://lcvirtualwildlife.ca/index.php?Itemid=66&catid=45:grizzlybear&id=61:grizzlybear&option=com_content&view=article
http://lcvirtualwildlife.ca/index.php?option=com_content&view=category&layout=blog&id=44&Itemid=65

The Washington Department of Fish and Wildlife has a “Living with Wildlife” series that explains the instincts, habitats, and ranges of many species

<http://wdfw.wa.gov/living/>

Who You Should Call

Who to call and what to do if predator problems arise:

*Notify your local conservation officer through the 24 Hour R.A.P.P Hotline (Report All Poachers and Polluters) at **1-877-952-7277 (RAPP)**.

*Refer to the Wild Predator Loss Prevention Pilot Project's "Guide to Targeted Predator Control."

Best Management Practices Checklist

General Husbandry Practices

- Pasture and areas surrounding fence are clear of vegetation where predators can hide
- Old farm equipment and other items are stored in a defined location away from where sheep are kept
- Dead sheep are removed quickly
- Dead sheep are buried deep enough so that the carcass is covered by at least 1 metre of soil
- Record keeping is done frequently and is up to date
- Flock is inspected regularly
- Lambing occurs inside
- Afterbirth from lambing is removed
- Lambs are given enough time to heal from docking and castration before being put to pasture/rangeland
- Sheep are confined at night
- Flock is grouped

Predator Deterrents/Scare Devices

- Bells
- Radios
- Lights
- Propane exploders
- Parked vehicles in pasture

Guardian Animals

- Dogs
- Llamas
- Donkeys

Predator Resistant Fencing

- Permanent
- Portable

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