

Links to More Knowledge

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The purpose of this document is to provide you with links to other websites so that you can deepen your knowledge about all things predator-livestock related. The other Wild Predator Loss Prevention Pilot Project documents cover the basics, but this document is here if you are looking for more. It is broken down into broad sections to help facilitate your search. Happy learning!

Useful general links

There are quite a few documents that touch upon the methods used to prevent livestock loss due to wild predators. These documents are listed below.

<http://attra.ncat.org/attra-pub/predator.html>

The National Sustainable Agriculture Information Centre created a web page called “Predator Control for Sustainable and Organic Livestock Protection.” It gives a brief overview of all the prevention measures that livestock producers can take to minimize livestock loss. It also contains some relevant links.

<http://www.ksre.ksu.edu/library/wldlf2/c620.pdf>

The Cooperative Extension Service of Kansas State University, Manhattan, produced “Managing Predator Problems: Practices and Procedures for Preventing and Reducing Livestock Losses.” It is an all-round, useful article. It also details what type of behaviour to expect from guardian dogs.

<http://www.cansheep.ca/User/Docs/VTBox/Predation%20Section%207.pdf>

The document produced by the Canadian Sheep Foundation provides excellent information about various means to go about preventing predation on your flock.

<http://www.predatorfriendly.org/how-to/index.html>

Predator Friendly is a certification program in the United States which was started between the conservationists and ranchers. It is similar to the organic certification, but focuses on keeping farms predator friendly. It has now expanded from sheep ranchers to include producers of meats, eggs, and honey.

<http://icwdm.org/>

The Internet Centre for Wildlife Damage Management is a website which includes links to university fact sheets, a list of agencies that can help with wildlife problems, and a downloadable PDF of the “Prevention and Control of Wildlife Damage Handbook.” It also has knowledge-based exercises where photos of predator damage/attacks are submitted, and livestock producers can speculate as to what type of predator caused the damage.

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

The Washington Department of Fish and Wildlife has a “Living with Wildlife” series that explains the instincts, habitats, and ranges of many species. It also includes detailed conflict prevention suggestions and fencing recommendations.

http://www.aphis.usda.gov/wildlife_damage/protecting_livestock/downloads/predators_booklet7.pdf

Utah State University produced “Lines of Defense: Coping with Predators in the Rocky Mountain Region.” This booklet outlines a significant amount of information about prevention measures that can be taken in order to minimize predation of your flock or herd.

http://www.mountainlion.org/Nonlethal_Literature_Review.asp

The Mountain Lion Foundation’s “Living with Lions” goes over some of the non-lethal steps you can take to help minimize livestock losses associated with cougars.

Guardian Animals

Guardian animals play an important role in helping to prevent predation on many livestock animals. This next part of the document is broken down into sections relating to each guardian animal (dogs, llamas, and donkeys) with respective sources containing more in-depth information. These documents are good starting points for those considering guardian animals.

Dogs

*Breeds

<http://www.gov.mb.ca/agriculture/livestock/sheep/bsa01s11.html>

The Manitoba Agriculture, Food and Rural Initiatives’ “Sheep Predator Control and Guard Animals” provides suggestions for suitable types of dogs.

<http://www.sheep101.info/guarddogs.html>

This site is helpful for understanding the different characteristics of the most popular breeds of guardian dogs.

http://www.pacificsunalpacas.com/guardian_dogs/

This website is maintained by breeders out of Duncan. It gives information about different types of breeds, how to pick a good dog, as well as how to train a guardian dog.

<http://www.invasiveanimals.com/wp-content/uploads/2010/09/Guardian-Dogs-web.pdf>

This Australian document contains information about breeds, training dogs, dog management, common problems, and case studies.

*Costs

Guardian dogs have higher feed costs than both llamas and donkeys. The following sites provide a good idea of how much monetary investment dogs realistically require.

http://www.sheepusa.org/user_files/file_717.pdf

American Sheep Industry Association's "Best Management Practices for Livestock Protection Dogs" article is relevant as it takes into account all the shots, vet visits and grooming that guardian dogs require so that the dogs can be as successful as possible. It seems to be realistic in terms of the costs associated with guardian dogs.

<http://www.invasiveanimals.com/wp-content/uploads/2010/09/FAQs.pdf>

"Frequently Asked Questions: Best Management Practices for the use of Guardian Dogs" was sponsored by the Australian Farmers' Association, AGForce and the Australian Government. It provides answers for a multitude of questions one could have about guardian dogs. In particular, it breaks down the costs of having a guardian dog.

*Other Considerations

There are many details regarding keeping a guardian dog that some people might not think to consider. The following are a few websites to check out before buying a dog.

<http://www.omafra.gov.on.ca/english/livestock/sheep/facts/10-033.htm>

This Ontario fact sheet focuses on what to expect in terms of caring for your dog in the winter.

<http://www.nal.usda.gov/awic/companimals/guarddogs/guarddogs.htm>

United States Department of Agriculture's "Livestock Guardian Dogs: Protecting Sheep from Predators" document answers many of the questions posed in the introduction about dogs. In particular, this site is good for understanding the pros and cons of keeping guardian dogs.

Llamas

<http://www.predatorfriendly.org/how-to/how-to-pdf-docs/Guard%20Llama%20Guidelines,%20International%20Llama%20Association.PDF>

The International Llama Association produced a document called "Guard Llama Guide: Recommendations for Selection and Placement of Guardian Llamas." This site provides basic information about llamas as guardian animals.

<http://www.predatorfriendly.org/how-to/how-to-pdf-docs/Guard%20Llamas-%20Integrated%20Sheep%20Protection,%20Iowa%20State%20Univ..PDF>

This publication provided by Iowa State University called "Guard Llamas: A part of integrated sheep protection" provides information about the care, management, cost of llamas, and also provides some studies of their effectiveness. It compares the cost of keeping a dog to the cost of keeping a llama.

Donkeys

<http://www.omafra.gov.on.ca/english/livestock/sheep/facts/donkey2.htm>

“Guidelines for Using Donkeys as Guard Animals” by the Ontario Ministry of Agriculture, Food and Rural Affairs provides all the information one would need to make a decision about using a donkey as a guardian animal. It outlines the cost of keeping a donkey, advantages and disadvantages of donkeys over dogs, whether to use male or female donkeys, and their effectiveness.

<http://www.predatorfriendly.org/how-to/how-to-pdf-docs/Protecting%20Livestock%20with%20Guard%20Donkeys,%20Govt.%20of%20Alberta.PDF>

This Alberta fact sheet provides information about donkey care and how long they live. These are important considerations when trying to decide which guard animal to choose.

Fencing

There is a considerable amount of information about the use and efficacy of fences as a way to keep predators from preying on your livestock. The sources range in detail. Just be careful not to get lost in all of the information.

[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 types of predator resistant fencing.

<http://www.scians.org/documents/factsheets/91eb2ec43bb177b37a19a362f0e6963af30aa9cc.pdf>

Nova Scotia’s Soil and Crop Improvement Association’s fact sheet on electric fencing provides pointers and hints for building fences for both cattle and sheep.

<http://www.omafra.gov.on.ca/english/engineer/facts/08-035.htm>

Ontario Ministry of Agriculture, Food and Rural Affairs fact sheet on “ Farm Fencing Systems” explains different types of fencing and directs you to other relevant Ontario Fact Sheets about fencing.

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

The fencing section of this website is a good bet for directing you to information that you need.

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

“Building an Electric Antipredator Fence” is a do-it-yourself manual for electric fences 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 of designs.

http://www.aphis.usda.gov/wildlife_damage/nwrc/symposia/invasive_symposium/content/Day_418_433_MVIS.pdf

“Multiple Species Exclusion Fencing and Technology for Mainland Sites” evaluates the efficacy of several different types of fences. The study essentially aims to verify the claims made about the usefulness of different types of fencing. If you are the type of person who needs to research everything about an item before you purchase it, this is a worthwhile article. If you just need to get a fencing system figured out and put up, one of the other do-it-yourself websites would be a better use of your time.

Animal Husbandry

You may find that there is quite a bit of overlap when researching on the subject of how animal husbandry can impact predation of your flock or herd. The websites listed below are brief and to the point.

http://www.omafra.gov.on.ca/english/livestock/sheep/facts/info_mgmtpredinf.htm

The article, “Sheep Management Practices Can Influence Predation” from Ontario Ministry of Agriculture Food & Rural Affairs” provides a concise overview of how animal husbandry can impact predation.

<http://www.omafra.gov.on.ca/english/livestock/beef/news/vbn0504a1.htm>

“Never Cry Wolf” from Ontario Ministry of Agriculture Food & Rural Affairs explains wolf predation on calves, and what measures livestock producers can take to minimize damage.

*Disposal of Carrion

Disposing of carcasses is a topic within animal husbandry that requires careful consideration. For information about this component of animal husbandry, read through the websites listed below.

<http://www.agf.gov.bc.ca/resmgmt/publist/300Series/384300-2.pdf>

The B.C. Ministry of Agriculture, Food and Fisheries’ fact sheet called “Large Animal Disposal” describes procedures for on-farm disposal of carrion.

<http://www.cattlemen.bc.ca/docs/mortality%20disposal%2010.pdf>

B.C. Cattlemen Association provides information about on-farm and off-farm disposal options of carrion in B.C.

Predator Repellants

The technology surrounding predator repellants changes quickly. The following websites give examples of what is currently the most widely used and accepted.

<http://ddr.nal.usda.gov/bitstream/10113/36304/1/IND44288759.pdf>

The document, “Tools for the Edge: What’s New for Conserving Carnivores” provides a comprehensive comparison chart of different tools, an estimate of their cost, as well as the duration of their effectiveness.

<http://margosupplies.com/public/>

Margo Supplies offers other problem wildlife control supplies.

Examples of Commercial Scare Devices

Deterrent	Use	Cost
The Critter Gitter (developed from the USDA/APHIS-WS’s “Electronic Guard”)	Light-sensing device that combines a strobe light and a siren at random intervals	Can be ordered from the Wildlife Service Supply depot (208) 236-6920 or purchased online at http://crittergittersenson.com/ Prices range from \$38.00-\$79.95 (USD)
Scare Crow Motion-activated Animal Deterrent	Motion-activated sprinkler that startles animals with a short burst of water	Can be ordered from a Victoria-based company called Contech Enterprises at http://www.contech-inc.com/products/scarecrow/ \$99.00 CAD
Wolf Urine	Uses wolf urine to deter coyotes	Can be ordered online at http://www.predatorpee.com/Merchant2/merchant.mv?Screen=CTGY&Store_Code=LE&Category_Code=WU Prices range from \$19.99-\$73.99 (USD)

Predators and Predation

This section contains information about the most common predators in B.C., as well as information about what to do and what to expect when predation occurs.

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

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

[http://www.michigan.gov/documents/
Brochure Did Predator Kill Livestock 165508 7.pdf](http://www.michigan.gov/documents/Brochure_Did_Predator_Kill_Livestock_165508_7.pdf)

The Michigan Government created a short online brochure called “Did a Predator Kill My Livestock?” A quick read of this document will help you to know the basic steps of what to do when you discover that one of your livestock has been attacked.

“Predators and Farmers.” Davies-Mostert, H., Hodkinson, C., Komen, H., and Snow, T. A publication by the Endangered Wildlife Trust’s Wildlife Conflict Prevention Group, the Carnivore Conservation Group, and the Birds of Prey Working Group. Accessed at <http://www.peopleandwildlife.org.uk/publications/Predators%20and%20Farmers%20book.pdf> Even though the scope of this article is narrowed to the predators of South Africa, it still pertains to residents in B.C. due to its heavy focus on principles and techniques in wildlife conflict prevention.

Information on 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>

[http://www.srd.alberta.ca/ManagingPrograms/FishWildlifeOfficers/
HumanWildlifeConflict/Cougars.aspx](http://www.srd.alberta.ca/ManagingPrograms/FishWildlifeOfficers/HumanWildlifeConflict/Cougars.aspx)

Information on Wolves:

[http://www.elp.gov.bc.ca/cos/info/wildlife_human_interaction/docs/
wolves.html#predators](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

Information on 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>

[http://www.srd.alberta.ca/ManagingPrograms/FishWildlifeOfficers/
HumanWildlifeConflict/Coyotes.aspx](http://www.srd.alberta.ca/ManagingPrograms/FishWildlifeOfficers/HumanWildlifeConflict/Coyotes.aspx)

Information on 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

Academic Studies

The following journal articles have been provided for those of you who desire to understand some of the empirical evidence behind a few of the claims in the previous articles.

Linnell, J. C. D., Odden, J., Smith, M. E., Aanes, R. and Swenson, J. E. “Carnivores that kill livestock: do “problem individuals” really exist?” *Wildlife Society Bulletin* 27 (1999): 698- 705. Accessed at <http://www.bearproject.info/uploads/publications/A%2024%20Large%20carnivores%20that%20kill%20livestock.pdf>

This article examines the possible traits that could be associated with problem predators. It also explores the question “does livestock husbandry influence the the development of problem individuals?”

Bangs, E. and Shivik, J. “Managing wolf conflict with livestock in the Northwestern United States.” *Carnivore Damage Prevention News* (2001): 1-5. Accessed at http://168.68.129.70/wildlife_damage/nwrc/publications/01pubs/01-95.pdf

This article provides a concise summary of a study which examined the cause of death amongst calves (including predation).

Musiani, M., Muhly, T., Cormack Gates, C., Callaghan, C., et al. “Seasonality and reoccurrence of depredation and wolf control in western North America.” *Wildlife Society Bulletin* 33(2205):876-887. Accessed at <http://www4.gvsu.edu/griffinc/wolvesp.pdf>

This article focuses on the seasonality and reoccurrence of wolf depredation on livestock.

Mach, D., Harper, E., Meier, T., and Paul, W. “Assessing Factors That May Predispose Minnesota Farms to Wolf Depredation on Cattle.” *Wildlife Society Bulletin* (28) 200: 623-629. Accessed at http://74.125.155.132/scholar?q=cache:ysVmUAEPzx4J:scholar.google.com/&hl=en&as_sdt=0,5&as_vis=1

This study examines the management practices on farms experiencing losses of livestock and those which did not experience losses. The results were then compared against each other to see if there were husbandry practices that differed from each other, and that might effect predation.

Other Relevant Information

<http://www.aphis.usda.gov/ws/factsheets.html>

USDA-WS has put together a list of fact sheets and links regarding livestock predator interactions.