

Something's Been Killing My Sheep – But What?
How to Differentiate Between Coyote and Dog Predation
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Introduction

The range and extent of predation on Ontario sheep has escalated at an alarming rate to the point where it threatens the viability of many operations. Predation losses are compensated under the *Livestock, Poultry and Honeybee Protection Act*. Losses attributed to feral or domestic dogs are not included, since they are compensated by the districts, municipalities or townships.

Identifying the cause of death is not easy, but it can be especially difficult for inexperienced sheep producers. The purpose of this factsheet is to aid producers and livestock evaluators in distinguishing between losses caused by predators and non-predator causes. If predation is the cause of death then it is particularly important to identify the species responsible so additional control measures can be implemented to minimize future losses. Heavy emphasis is placed on distinguishing between coyote predation and dog predation, since they collectively account for almost all predator related losses in Ontario flocks.

Predation or Scavenging

A dead sheep has been found. The first question which needs to be answered is whether the sheep was killed by a predator or whether it died of some other cause and the carcass was subsequently scavenged. The key clue to look for in distinguishing between predation and scavenging or carrion feeding is the presence of blood either at the point(s) of attack on the carcass or around the kill site. Bleeding can only occur before, and shortly after death. Bites made to a live animal will produce haemorrhaging which eventually shows as bruising under the skin. However haemorrhaging, and subsequently bruising will not occur on a dead animal which has been scavenged. In densely woolled sheep carcasses it may be necessary to skin the neck and head area in order to see tooth punctures and bruises.

Being opportunistic predators, coyotes often prefer lambs to adult sheep. Distinguishing a newborn lamb which has been killed by coyotes from a stillborn lamb which has been scavenged can be difficult. In order to do so, it must be determined whether the lamb breathed, drank or walked before it was eaten. Alberta Agriculture recommends looking for the following clues:

1. Did the lamb walk? The soft membrane covering the sole of the hoof wears off quickly when the lamb begins to walk. If the membrane is still intact odds are that the lamb was stillborn.
2. Did the newborn lamb breathe? If the animal has breathed the lungs will be pink and feel light and spongy and will float in water. The lungs of a stillborn lamb will be a dark purplish-red colour and will sink when placed in water.
3. Did the lamb nurse? The presence of milk in the stomach is also evidence of a live birth.

If scavengers are given adequate time and opportunity to feed on the carcass, it will be virtually impossible to differentiate between predation and scavenging on an animal's carcass that died from some other cause.

Producers should also search the area where the carcass was found, for other evidence which may explain the cause of the loss. Finding predator tracks, hair or droppings near a carcass may support the theory of predation, but these findings on their own do not automatically mean that predation has occurred, as predators do often scavenge carcasses. Signs of a struggle, drag marks on the ground, broken vegetation and/or blood around the site are all strong evidence of predation. Another possible indicator of a predator attack is if the flock appears somewhat more nervous and vocal than normal.

Was It a Coyote or a Dog?

Based on the above criteria the producer has concluded that predation is the likely cause of death. But what species of predator was responsible? Fortunately each species of predator has its own predatory

habits and feeding characteristics. Undoubtedly there will be some exceptions but the following guidelines should better enable individuals to distinguish between losses caused by the most significant Ontario predators, coyotes and dogs.

Time of Attack - Coyotes normally hunt at night but also have been known to kill in the early morning hours. Dogs on the other hand will attack at any time during the day or night.

Duration of Attack - Coyote attacks do not generally last very long as they are quick and competent killers. Dog attacks on the other hand tend to be longer and more drawn out as they are generally inefficient predators.

Temperament of Flock - The behaviour of the flock after an attack can be important in determining the species of predator. Since coyotes kill principally for survival, their attacks are usually quick and focused on a small number of sheep. After a kill, coyotes will eat their prey and leave the rest of the flock alone. Consequently a flock witnessing a coyote kill will not normally appear as spooked, stressed or noisy as those suffering a dog attack. After a dog attack the flock is more apt to be nervous and confused because the attack lasts longer, involves more chasing and harassing and usually involves several dogs attacking numerous sheep. As a result, there is normally a lot of commotion and confusion during and after a dog attack.

The only exception to this might be during the period from July to September when the female coyote is teaching young pups to hunt. In such cases the flock may be high-strung due to the puppy's inexperienced attack techniques.

Extent of Attack or Kill - The number of sheep killed can also reveal the predator's identity. Kills in excess of two or three animals may suggest that dogs were involved. Dogs normally attack sheep for fun, rather than food, thus their harassment frequently leads to indiscriminate mutilation. Being relatively poor killers, dogs tend to chase sheep extensively and as a result more sheep are attacked, injured or killed over a wider area than in coyote attacks.

Dog attacks often involve more than one dog whereas coyotes normally hunt alone and like most wild predators they tend to kill only what they need to survive. Usually only one or two sheep will be killed with very few sheep injured. Again the possible exception is in the late summer and early fall when the pups are accompanying the adults.

Location of Attack or Carcasses - If coyotes are responsible then the carcasses are likely to be found relatively close together, near areas with plenty of cover which provides an easy escape. Carcasses resulting from dog attacks will on the other hand tend to be scattered throughout the pasture as the sheep panic to escape.

Target Animals - Being efficient predators, coyotes will generally target the smallest, slowest and most vulnerable animals, which most often, includes lambs. Dogs tend to be non-selective and will attack sheep of any age.

Attacking Behaviour - A thorough examination of the carcass or injured animal will provide key clues to narrow the predator's identity. To kill as quickly as possible, coyotes typically attack by biting sheep in the throat just behind the jaw and under the ears. They maintain a grip until the animal suffocates or dies of internal bleeding. The external puncture wounds in the throat may be difficult to see. Internal wounds will generally be a rupture of the larynx and severe subcutaneous trauma and bleeding. Coyotes seldom inflict injuries to other parts of the adult animal or carcass. Lambs will likely have bites to the head, neck and back causing extensive bone and tissue damage.

In late summer or early fall when the female coyote is teaching pups to hunt, some unusual wounds may result from the pups' inexperienced hunting techniques. At this time, bites and rips to different body areas are common. In such cases more than one sheep of a flock can be injured. However, if coyotes are the culprit, one clean kill should have occurred.

Wounds to numerous live sheep on body areas other than the head or neck are signs of dog predation. Dogs usually attack from the side or rear inflicting non-fatal wounds on various parts of the body. Frequently the skin and muscles in the flank, hindquarters and head will be ripped. Neck wounds will be superficial or severe lacerations, unlike the characteristic puncture wounds left by the teeth of a coyote.

Lambs killed by dogs will have a slashed and ripped appearance. Clumps of wool lying spread around the attack area likely suggest an inefficient dog attack.

Feeding Behaviour - Coyotes generally eat their kill. They start feeding in the abdominal cavity, eating the kidney, liver and lungs. The stomach and intestines are usually pulled out, but are not normally eaten, other than the surrounding fatty tissues. After the organs have been eaten the coyote will feed on the muscle tissue of the rear quarters or the rib cage and shoulder. Reliable signs of coyote feeding include muscle tissue with ragged edges and splintered and chewed ribs. Coyotes will often rub and roll in the carcass remains then may defecate after feeding. Coyotes generally do not scatter the wool or hide around the site.

Odds are if lambs go missing, coyotes are the probable predator. Coyotes will often take smaller prey back to its den, especially during May and June when feeding its pups.

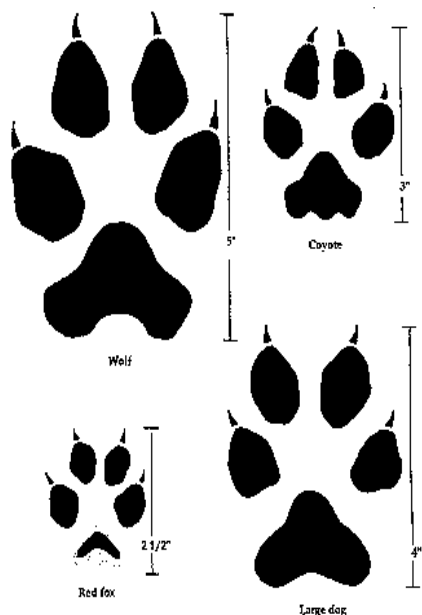
It is rare that dogs will either remove or feed on a kill. They may however chew on various parts of the carcass. If the dogs do feed they will usually eat from the outside in, generally starting around the anus area, as opposed to the coyote feeding on internal organs first. Coyotes may come back to feed on the carcass while dogs seldom return to feed off kills.

Tracks at Site - Since most kills occur on pasture there is rarely distinguishable tracks left behind. However if the ground is sandy or soft from a recent rain, tracks can distinguish the presence of either coyotes or dogs. It must be stressed however that tracks alone do not confirm that animal was the killer (Figure 1). Coyote tracks are more oval shaped and the nail marks left are less prominent than those of dogs. Coyote tracks are more uniform in size while dog tracks will vary in size according to size and weight of the dog species. Coyote tracks tend to follow a straighter line and the rear tracks follow directly in line with or on top of front tracks. A dog's rear tracks are normally slightly to one side of the front tracks.

Droppings - Droppings found near the site can also help to differentiate between coyotes and domestic dogs. Hair and pieces of bone in the droppings would suggest either a coyote or feral dog. The droppings from a domestic dog receiving dog food will show no evidence of hair or bones. Coyotes droppings tend to be black, due largely to their consumption of blood, while the domestic dogs droppings will be brown.

Conclusion

In most instances a prompt and thorough examination of the carcass, the site and live animals associated with the attack will aid in determining whether the death was due to an accident, disease or predation. If predation is the cause of death then the producer must decide if the problem can be resolved by modifying farm management practices (ie. pasturing closer to buildings, implementing night housing, improving dead animal disposal practices). If losses are extensive then the producer should consider implementing other predator control practices (use of livestock guard animals, electric fences, hunting, trapping).



References

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Figure 1: Predator Tracks