

Predator Control and Wildlife

Habitat Extension Bulletin

No. 57

Wildlife populations are controlled by a variety of environmental and man-made mechanisms. Habitat quality and quantity, weather, disease, parasites, hunting, and predation are just some of the mechanisms which prevent wildlife populations from growing too large.

Habitat Quality and Other Factors

Habitat quality is the most important factor determining not only the number of animals surviving in a given area, but also the extent to which other mechanisms affect the population. Habitats suffering from poor conditions support fewer animals, and the poor conditions weaken animals, leading to increased disease, parasite infestation, starvation, and vulnerability to predation.

Communicable diseases and parasites can have significant effects on wildlife populations. When animals are scattered thinly over a wide area, diseases and parasites are not readily transmitted. However, when wildlife population densities become high, parasites and/or diseases may spread quickly as contact between animals becomes more frequent. One example is bluetongue, a disease spread easily when big game animals become concentrated around the few remaining water sources in late summer. Animals living in adequate, quality habitats are afforded some protection against parasite and/or disease outbreaks since they are generally stronger and healthier, and therefore, more resistant to disease.

Climatic factors such as drought, wind, rain, snow, and temperature extremes can also limit animal numbers, especially when habitats are in poor condition. When animal populations exceed the carrying capacity of the habitat, competition for food increases. Animals stressed by lack of forage become vulnerable to limiting factors. Severe winters, in combination with poor habitat conditions, can kill large numbers of ani-

mals, with many years needed before populations recover.

Predation is yet another type of population control carried out by predators (animals that kill and eat other animals). In meeting their own food demands, predators help reduce prey numbers where an overabundance of prey animals exists. Predators also remove animals with poor survival characteristics: the weak, sick, injured, or unwary.

The size of a predator population is determined by available prey numbers, rising and falling as the prey base



golden eagle

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fluctuates. Predators have little effect on large prey populations at first. As more young predators survive, the effects upon the prey base become more evident. Because of the close tie to their prey base, it is rare that predators remove enough animals to negatively impact a prey population. Occasionally, in combination with harsh winter weather, a large predator population will drive a prey population lower than it would have been due to the winter alone. When this situation occurs, it is frequently a symptom of a more subtle and complicated problem: a wildlife habitat in poor condition.

Predators affecting wildlife populations in Wyoming include grizzly bears, black bears, mountain lions, bobcats, golden eagles, and coyotes. Some of these animals are protected, while others are managed as trophy game or furbearing animals, which can be harvested only by licensed hunters or when they are causing livestock depredation problems.

Because of its widespread range and prolific breeding, the coyote has been the target of most predator control activity. Though it is usually controlled to protect livestock, the coyote has also been targeted in predator control programs designed to produce more deer and antelope in localized areas.

History of Predator Control

Predator control has been around since man first domesticated certain animals. Protecting these animals was very important because they represented not only a great investment of time and money, but also were a means of survival.

Today this trend continues, with most predator control programs designed to protect livestock. The Federal Animal Damage Control (ADC) program was established primarily to reduce predator numbers to limit livestock predation. Although the program is designed to benefit wildlife, substantial benefits to wildlife have not been documented. Minimal ADC funding is focused on specific programs to protect wildlife in Wyoming.

Theory of Predator Control

Predator control (or reduction) is employed when predators are believed to be too numerous and/or taking too many desirable prey animals (e.g., deer, antelope, and game birds). The expected result of any predator control action is two-fold: first, to reduce the number of predators; and second, to increase the number of prey animals. However, predator control will not help restore a population of deer, antelope, or other animals declining because of habitat deterioration or overuse. Limited or mediocre habitats better enable predators to locate and catch prey. This is a common problem with pheasant and small game habitats today. The reduction of escape, nesting, and roosting cover

due to drought, overgrazing, or land use changes results in greater visibility of prey species and their concentration in a limited, suitable habitat. Predators key in on these areas, resulting in increased predation.

Results of Predator Control

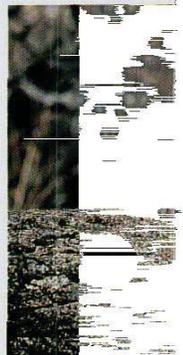
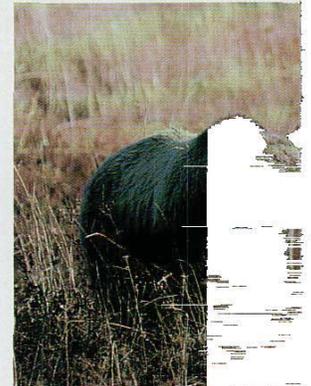
Predator control programs provide the best results in areas where predator numbers are high and game populations are below carrying capacity of the habitat. In these situations, reducing predator numbers may allow prey animals to increase to the land's carrying capacity without habitat damage. However, situations like this are rare and difficult to identify because carrying capacities can be difficult to determine. More often, predator control programs also reduce non-target bird and mammal populations and upset the ecological balance of the area, leading to compounded problems.

Methods of Predator Control

Predator control programs are best carried out just before whelping season (early spring) when predator populations are at a natural low. Control during the fall is often more popular since furs are in prime condition during this period and thus, worth more. Still, predator control efforts in early spring are most effective; nine months of natural limiting factors will have reduced predator numbers to a yearly minimum.

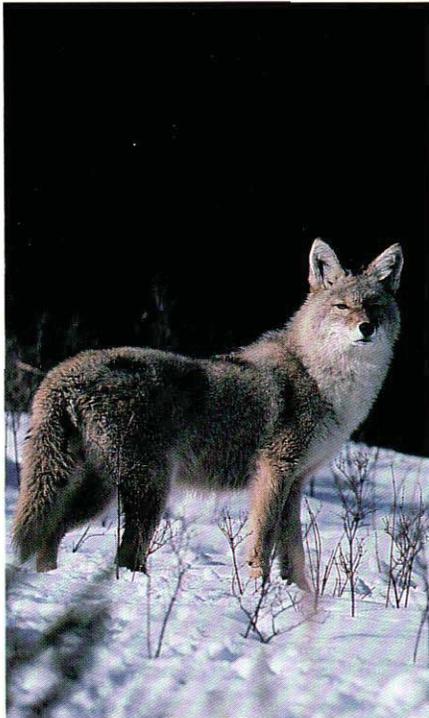
Predator control programs utilize a wide spectrum of materials and techniques varying in cost and effectiveness. Perhaps the most popular control methods involve the use of toxic chemicals. The compound 1080 sheep collar (a substance banned for general use since 1972) remains fairly popular among sheep producers for coyote control. Placed on random sheep within a herd, the collars are designed to kill only those predators involved in sheep depredation. Because most predators bite the neck of their prey, a coyote attacking a collared sheep will often puncture the collar in the process, ingest the drug, and die quickly. The cost of the collars prevents their use on large numbers of animals, thus limiting their effectiveness.

The M-44 ("coyote getter") is a spring-loaded device often used for coyote control. The device is buried in the ground, leaving only the bait-covered barrel projecting above ground surface. Often, a coyote will sniff and then pull on the barrel of the device in an attempt to





*Above (clockwise)
mountain lion,
coyote, black bear,
bobcat, and grizzly
bear*



Before restrictions were placed on predator toxicants in 1972, poison bait stations consisting of compound 1080, cyanide- or strychnine-laced carcasses were used extensively in the western United States. While these bait stations were relatively economical and covered large areas, they often attracted harmless, carrion-eating scavengers, allowed livestock predators to survive. Non-target species such as the inoffensive swift fox were particularly susceptible to poison bait stations.

When targeted at the coyote, predator control programs have actually been counterproductive because coyotes have the ability to rapidly recolonize an area following elimination of a resident population. Studies have shown that increased control of coyote populations tends to increase average litter size of surviving coyotes resulting in a relatively stable population. Larger litters increase food requirements of each coyote family, resulting in further predation. This problem is further compounded by the fact that livestock, particularly sheep, may be more vulnerable to

remove the bait. In doing so, the trigger is released, and the device projects a sodium cyanide capsule into the animal's mouth, resulting in almost instantaneous death. Though this is a favored method of coyote control, it has obvious dangers and a questionable history of effectiveness.

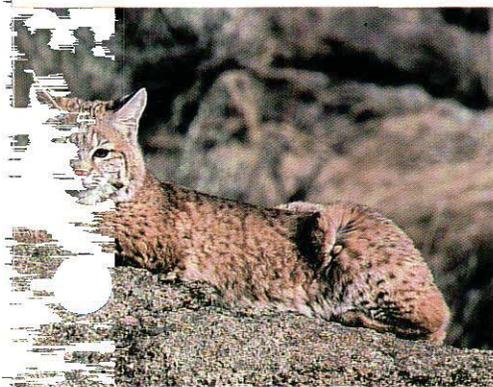
Shooting coyotes from aircraft is effective in some situations but is limited by terrain, vegetation, weather conditions, and above all, cost. Ground shooting, trapping, and den destruction can temporarily alleviate localized coyote damage but these methods are ineffective in reducing or controlling populations over large areas in a cost-effective manner.

Problems with Predator Control

Most predator control studies show that when control practices are intensive and continuous, predator control can be successful. However, truly successful predator control programs require significant amounts of money and manpower, and sometimes employ materials which destroy animals not associated with the predation problem.

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predation than wildlife. Thus, livestock predation may actually increase during and following predator control programs.



The economic benefits of wildlife-related predator control occur when extra prey animals produced as a result of predator control are harvested. Yet, only a fraction of animals saved by predator control are actually harvested. Wildlife managers must consider whether the massive outpouring of funds and potential environmental damage associated with a predator control program can justify the fairly small increase in harvested animals.

Alternatives to Predator Control

Researchers have found that where sufficient, high quality wildlife habitats exist, predator control is unnecessary. Animal populations ranging on poor or marginal habitats (e.g., the edge of their distribution range) will be affected more severely by all limiting factors, including predation. Maintenance of healthy food plants, strategic placement of watering areas, and development of cover will improve the ability of an area to support game species. With ample food, water, and cover, the odds of predators negatively impacting prey populations are substantially decreased. Habitat improvement, as an alternative to predator control programs, may be the only long-term solution to low populations of deer, antelope, waterfowl, pheasants, and other wildlife.

Predator Control Guidelines

Before considering predator control as an option to increase game animal numbers, the following questions should be addressed:

1. Are predators definitely limiting prey numbers? If predators are not the primary limiting factor, their removal may only waste time and money, and could upset the ecological balance of the area, creating additional problems.
2. Can the available habitat support more prey animals? It is counterproductive to produce more animals through predator control if the available habitat cannot support them. Unless they can be efficiently and completely harvested, additional animals may damage the habitat, leading to increased mortality and fewer prey animals.
3. Can the specific predators causing damage be removed efficiently and economically? Animals causing the problem should be targeted for removal rather than general predator control which is expensive

and may create adverse impacts on the wildlife and wildlife habitat. Remember that predator control techniques must be specifically selected for an area and a situation; not all techniques can be employed in all areas or for all situations.

4. Will predator control damage other wildlife or environmental values? Predator control benefits will be negated if the program fails to provide safeguards for other environmental components. Predators are merely one feature of a complex natural system; any strategy to control them must protect other system components.

If the decision is made to begin predator control, the program must be intensive and continuous to achieve desired results. A substantial commitment of time and finances is a necessary part of any predator control program.

Summary

For thousands of years, predation has been one component of the natural environment: predators culling inferior prey and scavenging animal carcasses. Predation rarely controls the growth of a population of animals. In fact, in situations where predators are having a significant effect on wildlife populations, predation may actually be a symptom of the real problem: a lack of quality, wildlife habitats. Before implementing a predator control program, it is important to carefully weigh the extensive time and cost of such a program against its intended benefits, and to consider that predation may simply be a symptom of a larger problem which could benefit more from the resources.

Where to Find Help

In each of the regions administered by the Wyoming Game and Fish Department, damage control wardens, wildlife biologists, and habitat biologists are available to discuss and help resolve predation concerns. Consult these experts for help by contacting any Wyoming Game and Fish Department office.

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This publication is one in a series of habitat extension bulletins produced by the Wyoming Game and Fish Department. Call 1-800-842-1934 for additional information or assistance.

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July 1995