

# The Basics of Wildlife Management

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## What is wildlife management?

Wildlife management is the art and science of reaching goals by manipulating and/or maintaining wildlife habitats and populations. This process involves many components, including the following:

- Your own knowledge and understanding of wildlife population trends
- Factors that influence wildlife populations
- The interaction of wildlife species
- The impact of humans
- How surrounding landscape affects wildlife.

## The Landscape Doesn't End at Your Fenceline

What one landowner does to manage wildlife will affect neighbors both near and far. For example, a landowner ban on hunting, which allows over population to occur, will affect habitat over the entire range of the herds. A lack of winter habitat for migratory animals will affect the potential size of the population in summering areas. To be an effective wildlife manager, you have to look beyond your own property boundaries. Few landowners have all the habitat that is occupied by a species year round, so they must consider what habitat is and is not available elsewhere when planning management strategies. Because animals will move on and off your property, your wildlife harvest objectives will be hard to achieve if your strategy does not take your neighbor's harvest practices into account. The most effective population and habitat strategies are done in cooperation with neighbors. It's understandable that private landowners like their independence and like to make their own decisions regarding their land.

On the other hand, it's worth the effort to communicate with neighbors to be sure that your goals don't directly conflict with those of nearby landowners. It is also important to consider the values of your neighbors. The large deer or elk herd one landowner appreciates in the fall is not so welcome when the herd overuses spring pasture needed for early grazing by a neighboring rancher. Being a "good neighbor" will go a long way toward finding solutions everyone can live with. Trading grazing privileges or cooperating on harvest strategies are examples of win-win situations that are built on open communication.

## Carrying Capacity

A piece of land can support only so many animals on a continuous basis. This may be the most important concept of wildlife management. Underlying most wildlife management decisions are two key components:

- Manage population levels to stay within carrying capacity
- Manage habitat to maintain or increase carrying capacity.

There are several factors to remember when considering carrying capacity.

1. Carrying capacity changes with the seasons. Summer carrying capacity is usually higher than winter carrying capacity.
2. Manage for extremes when considering carrying capacity. Habitat will have a higher carrying capacity in a mild winter than during a severe one.
3. Exceeding carrying capacity will have a compounding effect on the habitat. For example, if too many animals are present on a parcel of land, they will over-browse and kill shrubs. As a result, that same range will support fewer animals than it could have supported before over-browsing.
4. One species can affect the carrying capacity of another species. Heavy use of an area by elk may increase the browse line to a height deer cannot reach.
5. Carrying capacity may change from year to year. For example, snow depth, drought, cover and food can affect the land's carrying capacity.

In general, try to manage for "optimum" carrying capacity, which means trying to find a population level that can be maintained in good condition on a sustained basis.

### **Habitat Management**

The improvement or maintenance of habitat is one of the most important things a landowner can do to enhance wildlife habitat. Many people think locking up or preserving an area will make it best for wildlife. While development that would remove the space wildlife needs is certainly detrimental, activities that manipulate vegetation properly are usually good for wildlife. While some species such as red squirrels, mountain grouse and numerous non-game animals prefer older growth forests, most game animals thrive in areas that have younger stages of vegetation. The stage of growth of different vegetation communities is referred to as the stage of "succession." Succession is the natural progression vegetation communities go through as they transform from bare ground to the mature forests or grasslands. Certain species of vegetation are found at the various stages of succession. Certain wildlife species also do best using various stages of succession. Succession can begin after a fire, a landslide, or any other phenomenon that results in removal of vegetation. It can also result from a pond filling in, turning into a marsh, then a grassy wet meadow, then a willow flat and eventually a wooded area. Man-made activities can also set succession back. Plowing a grassland, clear-cutting a forest or using an herbicide to kill vegetation are all examples of creating early stages of succession.

If a forest burns, succession normally goes back to its earliest, bare ground stage. Grasses and forbs appear first; then other plants that thrive in full sunlight emerge. Gradually, small shrubs appear, eventually to be replaced by larger trees that out-compete them for nutrients and sunlight. The process then leads to a forest that is composed of mature trees with very little understory. The same process takes place when a prairie burns. Grasses and forbs that thrive in early successional situations are eventually replaced by grasses and shrubs that represent the most advanced prairie stage. The most advanced vegetative compositions of forests and grasslands are called "climax" stages. As wildlife managers, landowners need to determine which stages of succession they will manage toward to develop habitat for specific species.

It is important to remember that succession is always trying to advance. Therefore, the ideal stage today may be too advanced 20 years from now. Planning a "rotation" so there will always be some prime habitat available is part of any good habitat

management plan. The plan will allow for optimal successional stages now and at 10 year intervals until the cycle can begin again. Throughout this book, we will discuss the ideal habitats for many wildlife species. Most species need more than one vegetation succession stage to meet their demands for food and cover. Creating a variety of vegetation communities, made up of a variety of species at different ages, results in a pattern called a "mosaic" or "interspersed." This mosaic of vegetation is much more desirable than a large area made up of even-aged, single species vegetation. Creating this vegetation diversity is the best way to meet the multitude of habitat requirements that are best for the wildlife on your land. Wherever different types and/or ages of vegetation come together, they create an "edge." Edge is a term used to describe a special, and usually very valuable, part of the habitat because it contains the characteristics of both converging vegetation types. A meadow meeting a woodland is an example of an edge that is an excellent feature of the habitat. When creating edge, landowners should realize that irregular boundaries result in a much greater amount of edge than straight boundaries.

### **Population Dynamics**

Many wildlife populations have natural fluctuations called population cycles. These fluctuations can be long-term or short-term, subtle or extreme. For example, many wildlife populations will naturally follow an "increase until crash" population cycle. When this happens, the population number climbs steadily until something, such as a food shortage, causes the population to abruptly drop or crash. Because so many animals in the population die due to the food shortage, the animals that survive this period no longer have to compete as much for food. Suddenly the remaining animals have an ample food supply, so they are healthy and able to reproduce easily, leading to population numbers that again climb rapidly. Eventually, a level is reached where a limiting factor once again causes the population to crash, and the cycle continues. One goal of wildlife management is to keep the population low enough through hunting so the crash level is not reached. Reducing the impact of this boom and bust cycle prevents death and suffering of the species involved, while also preventing habitat degradation and waste of the wildlife resource.

Some factors that drive population cycles are density dependent, meaning these factors only appear when the population level reaches a certain density. Contagious disease is an example: when an area is too densely populated, a density-dependent factor will kick in. For instance, when coyote populations are low, the few that have mange are less likely to come into contact with other coyotes. Therefore, it is unlikely coyotes will pass on the mite that causes mange. When populations are high, the likelihood of one coyote interacting with others is high and the incidence of mange increases, as does mortality. Rabies and TB are other examples of density-dependent factors. Other causes of cyclic fluctuations are poorly understood. Some researchers theorize that obscure phenomenon such as sunspots, ozone or simple randomness may explain wildlife population fluctuations.

### **How Population Management Differs from Individual Management**

An important concept in wildlife management is that our objective should be to benefit the population, even at the expense of individual animals. Whenever a decision is made or an unpleasant event is witnessed, we must react based on population effects. Even though it is unpleasant that deer are killed by trains, the effect on the deer population is acceptable, and no one believes we need to eliminate the railroad to preserve deer.

Although the harvesting of pheasant hens is seldom legal or desirable, the fact that a hunter may occasionally shoot a hen by accident is not justification to outlaw hunting in general. As obvious as these examples may seem, landowners sometimes make wildlife decisions based on individual rather than population effects.

### **Public Land vs. Private Land Wildlife Management**

Aldo Leopold, recognized as the father of modern wildlife management, noted in the 1930s that "the future of wildlife management in the United States rests with private landowners." In spite of this early truism, most of the human interaction with wildlife populations and habitat in the Rocky Mountain West is concentrated on the vast public land areas. Government wildlife management agencies recognize the importance of private land, but the challenge continues to make private landowners full partners in managing wildlife on their property. The wildlife resource is one of the few natural resources owned by the state government and held in trust for the people. Although wildlife is owned by the state, it often depends on private habitat to survive. To make this situation function, private landowners must work cooperatively with wildlife agencies. We know that many private landowners have successful game management programs, since the most expensive guided hunts occur on private lands. Of course the exclusiveness of hunting on private land, where there is less competition from other hunters, may explain some of the desirability of hunting there. Certainly, the high percentage of trophy animals harvested on some private land suggests their population management is effective.

The biggest difference between private land wildlife management and public land wildlife management is how objectives are determined. Wildlife managers for public land must set goals to satisfy a public with a broad range of values. Private landowners can decide what they personally value in a wildlife population. Except in a few trophy areas, public wildlife managers must manage for maximum sustained yield: they must provide for the continuous harvest of as many animals as possible so the greatest possible percentage of public hunters are successful, even if most of the harvest is made up of young animals. Private landowners can set harvest objectives that promote protection of animals until they are older, even though fewer hunters would be able to harvest animals. In addition, public land managers must accommodate the citizens who value aesthetic beauty over habitat enhancement. For instance, it has been shown that planned timber harvest benefits game populations by increasing forage. Even so, sufficient timber harvest, which would maintain adequate early vegetation stages needed by deer and elk, is becoming more restricted on public lands. On the other hand, private landowners can decide the type and amount of habitat enhancement they desire to achieve their wildlife habitat objectives.

Public wildlife managers must manage for multiple uses and multiple species. Private landowners can decide what uses and what species they want to emphasize. Public managers have political and social pressures that drive their wildlife management decisions. Landowners have their own economic realities and personal values that influence how they manage wildlife on their land. Landowners certainly face restrictions. Primarily, their management must be within the scope of the laws and regulations set by both the state and federal government. Timber harvest, wetland manipulation, water quality and endangered species protection are just a few areas controlled by the government which affect wildlife habitat manipulation on private land. Other government-regulated topics that apply to the private landowner are hunting season dates and length, species permits, bag limits, and sex and age harvest restrictions.

Within laws and regulations, landowners have the legal authority to make decisions to enhance their wildlife populations. With the exception of a few wildlife management areas in the Rocky Mountain states, agencies generally do not have the authority to manage both wildlife populations and wildlife habitat. These duties are typically divided between the state and the federal governments. Generally, the state wildlife agency has authority to manage wildlife populations, while a federal public land management agency has authority over wildlife habitat management. On private land, the landowner has the ability to make decisions related to both wildlife populations and wildlife habitat. This is an important advantage for landowners.

### **To Wrap it Up**

The principles and concepts explained here are only foundations for wildlife management on private land. This discussion will be more complete when you, as a landowner, can place these concepts in context with practices and activities as you manage populations, food, water, cover and space for various wildlife species. While there is no substitute for practical experience, the following chapters will help you better understand the animals on your land and help you plan ahead to manage them