

Big Game Population Management for Montana Landowners

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Although it is one of the most important aspects of a healthy big game population, managing population numbers poses the biggest challenge for many landowners. Most big game animals have very large ranges. It is uncommon for one landowner to control the land used yearlong by these animals. As most landowners know, the success of any harvest strategy they attempt depends on the harvest strategies on surrounding lands. A landowner who is trying to achieve a more balanced male- to-female ratio by limiting buck or bull harvest and increasing doe or cow harvest may be very frustrated when a male- only harvest occurs on adjacent properties. If the animals roam from your property onto nearby public land, there is little you can do to direct the harvest toward a particular segment of the population.

Some landowners invite public hunters to harvest females from their land and, in exchange, give them permission to harvest a buck or bull every second or third year. If your land is more attractive to the game herds than surrounding areas, many hunters may relish the opportunity to help you reach your harvest objectives rather than just gaze at the game harbored on your land.

Some landowners who are trying to develop trophy animals allow hunters to shoot females, inferior bucks and bulls in exchange for an opportunity to go into the landowner's private drawing for permission to harvest a limited number of trophies. A long -term, mutually beneficial relationship with these hunters is the key to ensuring cooperation. One challenge landowners have is getting hunters to harvest the proper animals. Return hunters who understand your objectives are more likely to respect your wishes, but getting hunters to pass up a buck or bull because you need does or cows harvested is difficult.

As explained above, if hunters are told they cannot shoot a male until after they harvest a female, they will be much more cooperative. If they also understand that not cooperating means they will not be able to hunt the property in the future, they will be more inclined to cooperate. The landowner must be firm and consistent. For example, when hunters say they do not have a permit to harvest an antlerless animal, the landowner must tell them they cannot hunt this year; but, if they can get an antlerless permit and harvest a female next year, they will then be eligible to harvest a buck or bull.

Some landowners let sportsmen's' groups know they have a need for hunters. This is a good way to find cooperative hunters. Landowners usually need to share the harvest of some bucks or bulls, as well as does and cows, to maintain a cooperative relationship. Other ways to find hunters who will comply with your rules include placing an ad in the newspaper or posting a notice in a local sporting goods store. As a landowner managing your game herd, you need cooperative hunters to make your plan work.

By creating a clear understanding of the hunting rules on your land, you can build a mutually beneficial relationship with hunters in your area. If your land is within large blocks of other private landholdings, it makes sense to discuss your harvest strategies with your neighbors and try to develop agreements on harvest. If you can develop a

cooperative arrangement, the entire area will benefit. Sometimes, it takes a little ingenuity, and significant trust, to work out mutually beneficial agreements, but once the process is started, details quickly fall into place. If your land is in an area where nearby land is lightly hunted or not hunted at all, big game may quickly find refuge there once hunting starts on your land.

Consider resting your land for days or weeks during the season to encourage game to return. Also, hunt your land in a way that does not drive animals to protected areas. To do this, you might require hunters to start hunting from a direction that pushes animals away from the protected area. Perhaps you could establish some refuge areas on your land that are hunted only at the end of the season. Use your knowledge of big game movements on your land to develop hunting strategies.

Whether you are working with cooperative neighbors or managing harvest on your own land, you must determine these three things:

- What you have (your animal populations)
- What you want (your goals)
- How you get there (your objectives and strategies)

Before setting your goals, you and your co-planners must know the makeup of the herds. You must know what you have to work with now so you can decide what, if anything, must be changed to achieve your goals. There is information in Appendix A* that tells you how to determine the trend of animal populations on your property. Once you understand what you have, you and any co-planners must then agree on a goal. What do you want the herd to look like? Do you want high total populations? Trophy animals? A high percentage of bucks or bulls? If you and your neighbors can agree on goals, you've met the most important challenge. The next step is to develop the objectives that will help you achieve your goals. Your objectives will be specific actions. For example, what male-to-female ratio, or young -to-old ratio, do you want to reach, and how will you design the harvest to reach those numbers?

What Do You Have?

How do you determine the makeup of your big game herds? You certainly need sex and age ratios. You might also assume that you need a population number, but that is NOT necessary and it is not usually very accurate. Far more useful is a "population trend." Understanding the difference between a population number and a population trend is very important. A rancher needs to know the population number of sheep or cattle on the ranch. Stocking rates, winter-feed costs, annual income and many other factors are based on livestock numbers.

Many big game managers believe they must apply this same logical approach to the population numbers of deer, elk and antelope they are managing. The difference is that it's possible for a rancher to get an accurate count of livestock. But it is much more difficult, and often very expensive, to get an accurate count of most big game herds. In most cases, terrain, movement of the wildlife populations and the difficulty of observing wild animals make an accurate wildlife population count impossible.

Wildlife scientists use the term "confidence interval" to indicate the possible over- or under-estimation of a wildlife population survey. It is not uncommon to have a confidence interval of 1,000 on a population estimate of 3,000 deer. In other words, the

complete and accurate statement of a survey result might be, "We have a population of 3,000 deer plus or minus 1,000 deer." Because population surveys are not likely to be accurate, they are of little use when making management decisions. A measure that's much more useful is a "population trend." Over a period of years, a population trend is an excellent indication of whether the herd is increasing, decreasing or remaining stable. Because the trend is determined by actual observations while using the same route and methods each year, the "confidence interval" is much more reasonable. The procedure for developing a population trend route on your land is covered fully in Appendix A*. If landowners know the trend of the population over a period of years, they can determine the effect of their management decisions. For example, let's say a landowner who is content with his current deer numbers arranges for the harvest of 20 bucks and 20 does each year for a few years. If the population trend continues to climb, the landowner might want to increase the harvest of does. On the other hand, let's say a landowner wants to increase the population and has reduced the number of does harvested for a few years. If the population trend continues to decline, the landowner might further reduce the harvest of does.

The purpose of measuring a population trend is to indicate whether management decisions are having the desired effect on the population. In addition to the population trend, the landowner needs to determine sex and age ratios. Sex ratios are simply the proportion of bucks to does or bulls to cows. Age ratios give the number of fawns per doe, calves per cow and young males to mature males. Again, this information is necessary to determine whether you're meeting population objectives. To determine sex and age ratios, you will observe and record which of the following categories the animals fall into:

- male, female or unknown
- young or adult female
- juvenile or mature male

You can find detailed instructions and sample tally forms in Appendix A*. Landowners should also collect information on the age of harvested animals. You can find instructions for determining the age of deer and elk in Appendix B*.

What Do You Want?

As previously stated, the landowner and the cooperating neighbors need to determine goals and objectives to achieve those goals. A goal (What do you want?) is a general statement that provides a long-term direction. Objectives (How do you get there?) are steps or accomplishments to achieve the goal. In setting goals, landowner must decide the purpose of the herd. Is hunting the primary reason for the herd? Is trophy hunting a desire? Is the goal simply to have a large number of easily observable deer, elk or antelope? Is the primary purpose the harvest of many bucks or bulls? Is the herd for the enjoyment of visitors, family or community? After the goals are set, the next step is to develop the objectives that will make it possible to achieve your goals.

How Do You Get There?

The nuts and bolts of big game population management are developing strategies to achieve the objectives. It is important to be creative, open-minded and consistent as you develop strategies. In addition to population management, other aspects of wildlife

management may be involved in achieving your population goals. Habitat development, predator control, fence modification, and other strategies may all be important to achieving a population goal. One of the first objectives to be developed should be the desired population structure.

Population structure refers to numbers of animals and the sex and age makeup. If you can manage your population, you have the ability to manage the population structure to fit the capacity of your land and fit your desired sex and age ratios. For example, if you determine that the land can support X number of adult ungulates, you can determine if the herd should be made up of a 50- to-50 buck -to-doe ratio, a 10 -to-90 bull -to-cow ratio or some other combination. Every landowner has different ideas that should be included in the population goals and objectives. It is impossible to cover the myriad of situations that exist in all Rocky Mountain states. But to give you some ideas, a few example goals are listed below, along with objectives to help reach the goals and strategies to accomplish the objectives.

Example Goal A: To develop a population of deer that will result in maximizing the number of bucks that can be harvested on a sustained basis.

- Objective 1: Maintain the minimum population of does necessary to replace bucks as they die.
- Objective 2: Maintain a young age structure of bucks to maximize harvest but provide sufficient breeding males.

It is obvious that to develop the strategies to achieve the objectives, the landowner needs to know sex and age ratios. Then the strategies can include harvest targets for both bucks and does. Because our goal is to maximize buck harvest, we do not want any more does than necessary. We want to use our available habitat to support bucks and only enough does to replace bucks that die. This assumes that we like the population at the present level. If we want the population to increase, we must allow for more does. By knowing our fawn-to-doe ratio, we know how many does must be maintained to replace the bucks. If we shoot 20 bucks, then we need 40 does to replace them if we assume a 50-to-50 sex ratio of newborn fawns and our survey indicates a fawn- to-doe ratio of 1-to-1. If our survey indicated a 2-to-1 fawn- to-doe ratio, we would need 20 mature does to replace the 20 harvested bucks. Once you have this information, you can decide on a harvest target of bucks and does. Annual information from your population trend routes along with sex and age ratio surveys will indicate what changes are needed to achieve your objectives. Wildlife managers have a tendency to manage conservatively.

Although this makes it difficult to achieve population objectives quickly, in many cases it compensates for unforeseen mortality or miscalculation of herd productivity. It is usually a good idea to work toward objectives slowly rather than trying to achieve them in one year. The trend routes and sex and age surveys will then tell you if your decisions are leading toward meeting your goals. Example Goal B: Develop a herd of antelope that will produce the maximum number of trophy bucks on a sustained basis. Objective 1: Maintain the minimum population of does necessary to replace bucks as they die. Objective 2: Maintain an old- age structure (four to seven years) of bucks. You will need information on sex and age ratios to determine harvest targets for bucks and does.

We will assume, based on occasional historic harvest, the genetic potential exists to produce horns 15 inches or larger. Part of our strategy must include developing or maintaining the quality of habitat necessary to satisfy the nutritional requirements needed to develop trophy bucks. The most successful trophy antelope managers aim for a harvest of no more than one half of the 15- inch bucks. This allows some bucks to achieve the age necessary to grow even larger horns. By harvesting half of the bucks at 15 inches, you'll minimize the number lost to natural mortality. Because your goal is to maximize the production and harvest of trophies, you do not want any more does than necessary. You want to use your available habitat to support bucks, with only enough does to replace the bucks that die. If your goal, on the other hand, was to increase the population, you would need to leave additional does.

Continue to monitor the population trend and sex and age ratios to ensure population stability and to direct necessary harvest adjustments. These two scenarios are intended to give you an idea of the initial decisions that go into big game population management. Many more details will become part of the process as you extend your plan. Obviously, it is impossible to cover the multitude of goals, strategies and methods every landowner might consider. Quality management of deer, elk and antelope herds on private land is possible if landowners are ambitious, open- minded, creative and dedicated to scientific big game management.

*Manage Your Land for Wildlife (https://store.msuextension.org/Products/Manage-Your-Land-for-Wildlife__4508.aspx)