

# HOW TO GROW **Trophy** Mule Deer





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Photo ~ Ryan Hatch

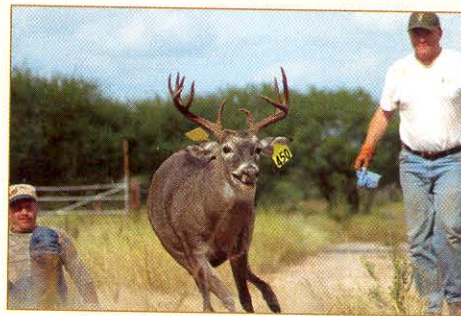
BY DR. CHARLES KAY

Unfortunately, very little has been written on how to grow large-antlered mule deer. In contrast, entire books are available on how to produce trophy whitetails and red deer—the same species as our North American elk. While quality management has taken the whitetail world by storm, western fish and game agencies have given little thought to producing trophy mule deer.

Based on studies of other cervids, three factors are key to growing large-antlered mule deer—genetics, nutrition, and age. First and foremost is age. The deer simply must live long enough to reach their full biological potential. Bull elk, for instance, do not achieve maximum antler growth until they are 7 to 10 years old. Mule deer bucks too do not achieve maximum antler growth until they are 6 to 8 years. To have mule deer of that age, you need 60 to 80 bucks per 100 does post hunt—a figure most sportsmen can only wish they had. If your post-hunt sex ratios are in the range of 10 to 15 bucks per 100 does or less, as is the case in many mule deer herds, the chances of a deer living long enough to produce maximum antler development is between zero and non-existent.

The only way to achieve the necessary post-hunt sex ratios and age structure is to curtail the buck harvest. Point restrictions will not work; a fact that has been proven time and again. A four-point minimum antler size might appeal to hunters, but it will do absolutely nothing to produce trophy mule deer, because

hunters simply shoot the first small four-point they see and few deer live long enough to reach maximum antler growth. So while point restrictions will increase the average age of the bucks harvested by a year or so, point restrictions, in and of themselves, will do nothing to produce trophy mule deer. Instead only limited-entry seasons have the potential to produce quality mule deer and then only if state game departments do not oversell the number of permits. This is usually not a problem with whitetails since virtually all the land in the Midwest, Texas, and back East is privately owned. If the landowner or leasee wants to grow trophy whitetails, it is a relatively simple matter to restrict



the harvest. In fact, according to Dr. James Kroll, who has spent most of his career studying whitetails and who has written a 590 page book on *A Practical Guide to Producing and Harvesting White-tailed Deer*, it is much easier to raise a trophy whitetail than it is to kill that deer! Except for exceedingly large private ranches, though, it is next to impossible for landowners in the West to produce true trophies because mule deer have much larger seasonal ranges than whitetails; i.e. the deer migrate to areas off the ranch.





Photo ~ Jim Vann

*Burning the range not only produces more forage by removing competing pinyon, juniper, conifers, and other unpalatable woody vegetation, but overall forage quality also improves.*

Under quality management, it is possible to produce a Boone and Crockett whitetail in as little as 3 or 4 years! This seldom happens with mule deer, but why? Because most of the whitetail's range is a smorgasbord of high quality foods and where agriculture does not provide adequate year-round forage, landowners will plant food plots strictly for the deer. In contrast, I have never read anything on using food plots to improve mule deer nutrition. For after age, nutrition is key to rearing large-antlered bucks. While private landowners plant specific winter, spring, summer, and fall food plots for their beloved whitetails, the best we have been able to do in the West is to burn a few acres here and there to improve mule deer habitat.

By firing the range, managers can not only produce more forage by removing competing pinyon, juniper, conifers, and other unpalatable woody vegetation, but forage quality improves, as well. Nitrogen is freed-up and the newly created charcoal improves the plants' ability to absorb nutrients from the soil. The problem in the West, however, is that there are too few controlled burns in the right places at the right times of the year. Plus we have the additional problem of too many elk. Elk that will eat all the new-growth and high-quality forage that is needed to fuel antler growth in mule deer.

To produce trophy deer, the animals simply must have a year-long diet of high-quality foods. Which brings us to the number one problem in rearing trophy whitetails—too many deer! If the deer population is not kept at one half, or less, of the land's carrying capacity, the deer will simply not grow big enough to develop large antlers. That is to say, antler quality is density dependent. The higher the density of deer on a given tract of ground, the less individual antler growth there will be because there is less food per deer. Since many whitetail hunters are reluctant to kill does, that having been the mantra for

years, most whitetail ranges simply carry too many deer. To overcome this problem, in some jurisdictions you have to kill a number of whitetail does before you are allowed to harvest a buck.

Now most western ranges do not presently carry too many mule deer the way eastern whitetail ranges do, but elk numbers have doubled and then doubled again since the 1950's. Since elk are three to four times the size of a deer, if you have 100,000 or more elk in your state, as many western states do, that is the equivalent of having an additional 300,000 to 400,000 mule deer competing for forage on ever-shrinking ranges. If you want to grow trophy-quality deer, there is such a thing as too many deer or too many elk. It is no coincidence that the best trophy mule deer areas in Arizona and Utah do not have any competing elk. Livestock grazing can also be a problem if not properly managed.

It is not only a matter of forage quantity but also of forage quality. Nitrogen, or protein, is important in producing large-bodied, healthy mule deer but phosphorus is the key to producing massive antlers. On most ranges, calcium is not limiting but phosphorus is. To overcome this problem, eastern landowners feed mineral supplements to their whitetails.



Photo ~ Luis Camou

*Fenced scenarios for mule deer are becoming more common now that western states such as New Mexico have legalized deer ranching.*





*Most western states have exceeded 100,000 on their elk populations. Since an elk will eat three times more than a deer, both mule deer habitat and their populations are at risk of being slowly phased out. The only answer....harvest more elk throughout the West.*

Have you ever heard of western state fish and game agencies doing the same for mule deer? If you have, it would be a first! Ever wonder why the north Kaibab is famous for producing heavy-antlered, record-book mule deer? Kaibab limestone, which covers the plateau, is high in phosphorus needed to fuel antler development.

Most mule deer hunters, and even some whitetail managers, think genetics is the key to large antler growth. In that, they are sadly mistaken. Take coastal blacktail deer. Did you ever wonder why they are smaller than mule deer or why blacktail antlers are so diminutive even on mature bucks? Genetics right? Wrong, Wrong, WRONG! During the 1950's and 1960's, researchers at the University of British Columbia conducted feeding tri-

als with penned coastal deer. Blacktails that were fed high-quality rations all their lives grew as large bodied and as large antlered as mule deer.

Blacktails live in areas with high rainfall, which over the years has leached most soil nutrients out of the plants' root zones. Without nutrients in the soil, plants produce low-quality forage, thus forcing blacktails to subsist on very poor diets. The famous 1933 Tillamook burn in western Oregon incinerated over 300,000 acres of coniferous forest, creating a plethora of high-quality forage. In the absence of predation and competition, no mountain lions, wolves, bears, or elk back then, the resident population of Columbian blacktails increased six-fold. Moreover, the average weight of the deer nearly doubled. Thus, it pays to hunt

burns if you covet a trophy blacktail or mule deer, if there are not too many elk.

European red deer, called stags, are similar to our elk. In fact, as mentioned earlier, most taxonomists now consider them to be the same species. At the turn of the last century all the largest red deer antlers were from stags killed hundreds of years earlier in medieval times. During the early part of the twentieth century, German industrialist Franz Vogt began long-term growth experiments with penned animals to determine whether this was due to genetic differences or nutrition. Vogt maintained his red deer on a high-quality diet, but did not select for the largest animals. Vogt found that body size increased progressively for at least four generations. That is to say,

Photo ~ Sam Carpenter



*A diet of high-quality forage is the most important ingredient to growing trophy mule deer bucks. Newly-generated habitat such as burnt or seeded areas offer a better quality of feed than that of old growth forests.*



before the genetic potential for antler and body size is revealed, one has to remove what is called the maternal lag effect. To grow heavy-antlered males, you first need to produce large-bodied, healthy females. A fact too often overlooked by sportsmen.

When Vogt's research was terminated prematurely by World War II, his animals fell just short of reaching the antler mass of the largest medieval stags. Still, Vogt's deer equaled or surpassed almost every red deer that had been taken in Europe for centuries. Europeans use the Nalder system to score their stags. In 1956, the European record was 229 Nalder points and the hundredth best stag achieved 200 points. Of the 36 third generation stags raised by Vogt, only one failed to reach 200 points and six exceeded the world record. Vogt's largest stags reached 242 and 247 points. Moreover, Vogt's red deer had doubled in body size. If Vogt had been able to continue his experiments, he surely would have produced the largest antlered red deer that have ever been recorded; all without purposeful genetic selection.

While antler mass is a function of both age and nutrition, antler size is also related to buck-to-doe ratios. Low buck to doe ratios lead to smaller-antlered deer, while high buck to doe ratios produce larger-antlered deer. With the low male to female ratios found on most western ranges, all the mule deer bucks participate in the rut, which severely stresses those deer. That stress leads to a lower nutritional plane, which in turn, causes the deer to grow smaller antlers. With high buck to doe ratios, though, most of the younger males experience psychological castration and abstain from the rut. Bucks that do not rut for the first 3 to 4 years of their lives conserve their fat reserves, grow huge

bodies, and then produce large antlers later in life. In Europe, when the male to female ratio was shifted to 110 males per 100 females, red deer stags up to five years of age did not participate in the rut. This maintained the young stags in a high nutritional state, permitted the deer to channel energy into body growth, and allowed the animals to produce huge antlers as they aged.

According to noted mule deer expert Dr. Valerius Geist, "The question of how to



Photo ~ Sean Crosby

create antler sizes equaling top, world-record dimensions has been a problem of management, not science, since Vogt's exacting work [more than] a half a century ago." If both male and female mule deer could be raised on high quality diets for three or four generations, there is little doubt you could produce antler-growth that would surpass the current world record. Age first, then nutrition, with genetics a distant third.

In the West, though, there is one more problem that needs to be addressed - predation. The old-age, large-antlered mule deer coveted by sportsmen are more susceptible to being killed by mountain lions or wolves than other

ages and sexes of deer, except fawns. This is due to the habitat that mature males select, and because the bucks enter winter in poor physical condition following the rut, predators select for older-age males. This is also true with whitetails. On one large Texas ranch under quality management, all the highest scoring whitetail bucks were being killed by a male mountain lion. Cougars are classified as predators in Texas, unlike other western states where lions have been deemed a game animal since the late 1960's, so Texas landowners are free to kill as many cats as they can. Still, that old tom could not be killed, even using dogs, jeopardizing the ranch's trophy management program.

There is a reason the Boone and Crockett Club lowered the minimum score necessary for mule deer to qualify for the record book. Large-antlered bucks are hard to grow under the conditions found on western ranges today. More difficult than any other big game species. During the last few years, my home state of Utah has produced more record book elk than any other state or Canadian province. Boone and Crockett mule deer, on

the other hand, are rare, even in limited-entry areas. This is because the high-quality forbs and shrubs that mule deer must have for antler growth have been, and are being, eliminated from western rangelands. Elk can survive on grass, mule deer can not. So although range conditions across the West have improved for grazing animals like cattle and elk, plant species composition has not, in general, improved for mule deer.

*Editor's note: In forthcoming articles Dr. Kay will discuss, "Where have all the Flowers Gone?" and whether or not shrubs needed by mule deer have declined due to climate change, insects, disease, too many deer, too many elk, or improper livestock grazing.*