Quality Deer Management

New Opportunities or Familiar Challenges for Deer Management in the Northern Rockies?

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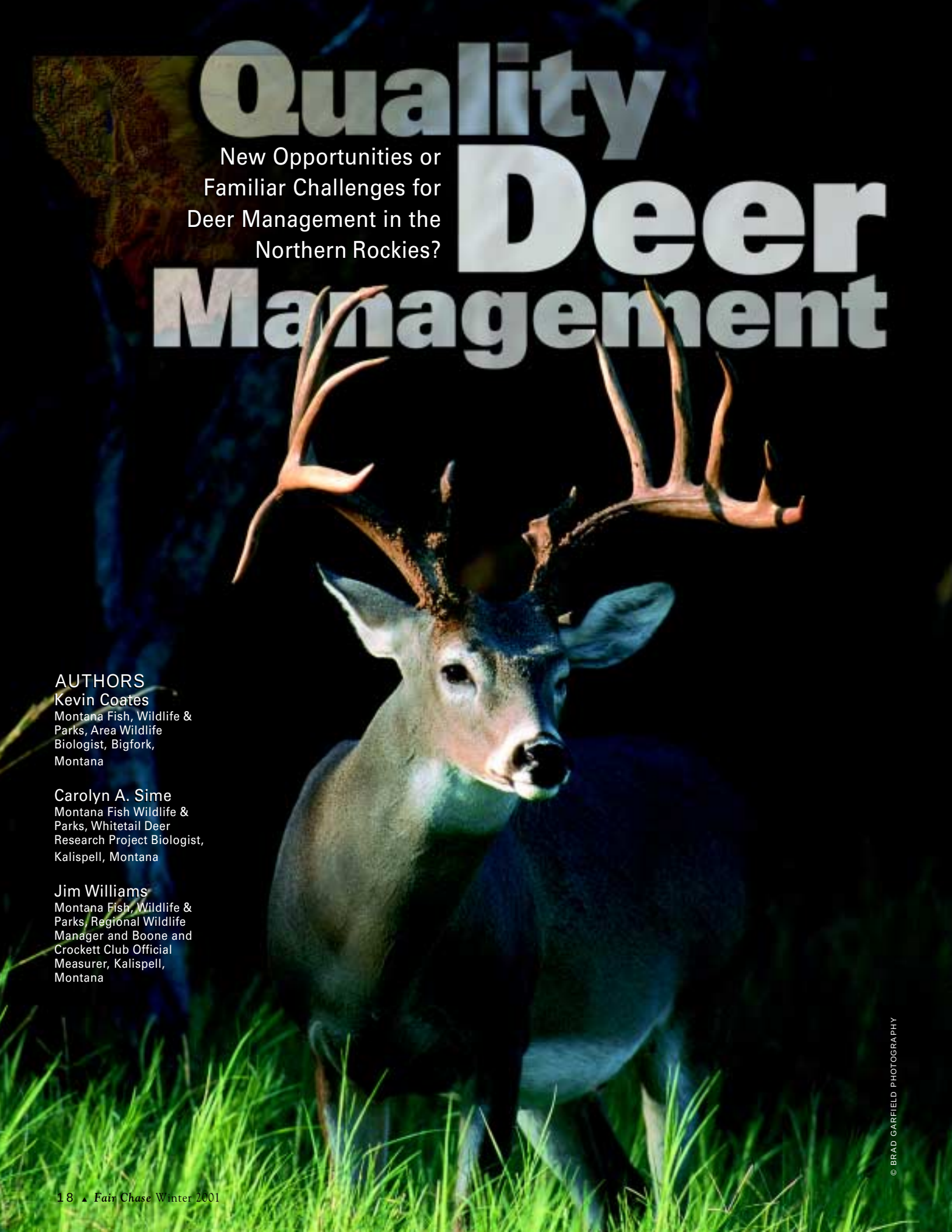

As frosty mornings and golden-colored larch needles signal autumn's arrival, deer hunters, whether at the local barbershop or the grocery store, can hardly pick up a popular hunting magazine that does not in some form or another address the emerging concept of "quality deer management" or "QDM" between its covers. What is QDM and how does it apply to whitetail deer in the coniferous forests of northwest Montana?

Can we as hunters apply any of the QDM principles to our hunting areas on public and corporate timberlands? These are interesting questions. As wildlife biologists for Montana Fish, Wildlife & Parks in northwest Montana, we are frequently confronted by the challenges of managing whitetail deer populations inhabiting our mountainous conifer forests. Northwest Montana forests, both managed and not, do support abundant whitetail deer but observing them is not always easy. It's sort of like the old saying about not being able to see the forest (or deer) for the trees.

The emerging concept of quality deer management or "QDM" generally involves producing quality bucks, does, and fawns in high quality habitats and providing a satisfactory hunting experience, whether the prize is delicious venison or a trophy buck. This sounds pretty simple on the surface and we assume that this is what most whitetail deer hunters desire. But we need to explain what QDM principles actually are. In a highly popular and recently published technical book edited by Dr. Larry Marchinton and Dr. Karl Miller, ***Quality Whitetails: The Why and How of Quality Deer Management***, QDM is defined as:

"The use of restraint in harvesting young bucks combined with an appropriate level of antlerless deer harvest to maintain a healthy deer population in balance with the habitat."

However, in northwestern Montana, we hear time and time again from our hunters that the more does or "breeding stock" remaining at the end of the hunting season, the more quality bucks are available for hunters the following fall and in later years. We also hear from hunters that there are fewer mature whitetail bucks available now than 10 to 15 years ago. Let's explore these issues further.

Quality deer management proponents state that deferring the harvest of yearling bucks and achieving an adequate antlerless harvest will change herd composition and improve overall conditions for the entire deer herd. Furthermore, increases in buck antler sizes and body weights, and in the doe reproductive output, are usually evident within two to three years after deer density is reduced by an increased antlerless harvest. Antler size and body weight of bucks increase because behavioral competition within the herd for space and forage decline. At lower herd densities, reproductive output of does increases, often as a result of twinning, and because does would begin breeding at a younger age. Breeding as fawns is not uncommon in some areas of the southeastern United States. These concepts assume both food and space are limiting factors for the deer herd and these assumptions may or may not be valid in northwest Montana. Interestingly, the majority of whitetail deer in northwest Montana are migratory, moving as far as 30 miles between distinct summering and wintering areas. Further, it appears that major winter events, like the severe winter of 1996/97 in northwest Montana, periodically "reset" our herd densities. Dr. James Kroll, in his book ***Producing and Harvesting White-tailed Deer***, advised deer managers to keep in mind that factors independent of density may be more influential in populations at or near the northern periphery of the species range. In fact, research in northwest Montana indicates that the influence of winter weather can be more significant on whitetail deer populations than the impacts of hunting season types.

Misconceptions about QDM include the idea that "trophy management" and QDM are one and the same and that under QDM fewer total deer will be harvested. First, QDM is not trophy buck management. QDM principles emphasize habitat quality and the entire deer population, not just maximizing the Boone and Crockett score of mature bucks. Second, QDM does not necessarily mean that fewer deer will be harvested, but rather that different deer will be harvested — more antlerless deer and more mature bucks. Marchinton and Miller emphasize that one of the cornerstones of QDM is overall deer population regulation through adequate doe harvest.

How do these concepts apply in the conifer forests and mountains of northwest Montana where a typical hunter might observe a dozen whitetail deer on a good day, compared with 50 to 100 during a good day of hunting the agricultural lands and prairies of central and eastern Montana? Observing deer in the trees can be difficult. Some hunters are surprised to learn that as many as 200 whitetail deer can occupy a

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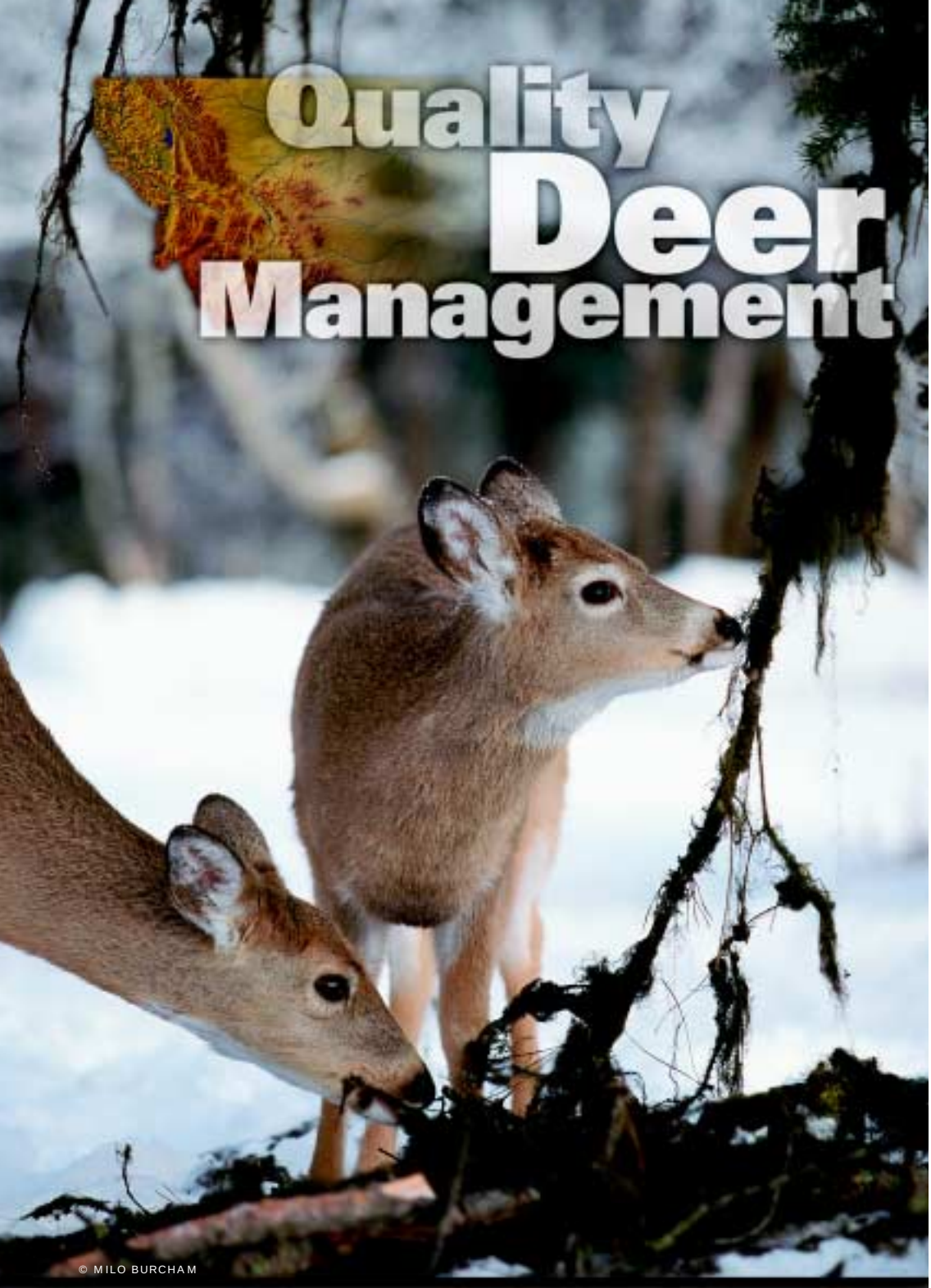

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square mile of coniferous habitat when deer are congregated on winter ranges. The difficulty in observing whitetail deer in dense, brushy vegetation contributes to a high level of concern for whitetail deer numbers among many hunters.

Hunter perceptions and concerns over whitetail deer buck numbers and quality in northwest Montana result from the decreased total buck harvest in recent years relative to the late 1980s and early 1990s In reality, it's not so much that the age class distribution of harvested bucks has changed in the region, but rather that the overall whitetail deer harvest has been proportionally lower. These changes resulted from the severe winter of 1996/97, which caused a decline in the overall number of deer on the landscape. Additionally, in northwest Montana, bucks probably enjoy elevated habitat security during the hunting season because of our heavily forested mountain habitats. The *cementum annuli* (a laboratory tooth analysis by cross-sectioning the incisor and counting the growth rings) of bucks checked through our regional check stations in the fall consistently show that we do indeed still have mature bucks in the population, albeit at proportionally lower numbers across the entire spectrum of age classes since the winter of 1996/97 (see Table 1).

Quality deer management principles often emphasize that protecting yearling bucks can be best accomplished by voluntary restraint on the part of the hunter rather than by antler point restrictions through regulation. We also believe that this is true in northwest Montana because yearling whitetail deer bucks may have up to three or four antler points, as do many of the two- and some of the three-year-old bucks. Although two- and three-year-old bucks will have greater beam length and mass than yearlings, the actual point count may not change until they are at least three or four years old. To practice the QDM principle of restraint in harvesting young bucks in northwest Montana would require hunters to identify and pass up yearlings by their relatively small body size, short face, shorter beam length, and narrower spread – all of

which could be difficult to discriminate in densely forested habitats.

How does this relate to your favorite whitetail deer hunting spot in the deep woods of northwest Montana? Simple. If you want to experiment with these buck harvest principles, pass up the younger buck for an older buck or harvest an adult doe, where and when legal. In theory, this will make those young bucks that you passed up earlier available to you when they are more mature.

Do Montana Fish, Wildlife and Parks wildlife biologists believe that it is critical for hunters to subscribe to these principles in order to have mature bucks in the whitetail deer population of northwest Montana? No. We believe that the habitat security afforded to whitetail deer by all of the trees and mountainous topography probably assures that adequate numbers of bucks survive the hunting season and are recruited to the next age class. However, it is important for hunters to recognize that their individual choices can collectively affect overall herd structure and dynamics. As hunters we can experiment with these new principles in our favorite hunting locations as opportunities present themselves. But as hunters, we must also recognize and respect that each of us make individual choices and that each may not be a participant in the same experiment.

What is an adequate or appropriate level of doe (or antlerless) harvest in northwest Montana? QDM and other management theories discussed in popular hunting magazines propose an adequate doe harvest, citing among other factors, habitat benefits and deer density relationships. For the purposes of this article, we assume that this represents a buck to antlerless deer harvest ratio approaching 1:1. That is to say that one antlerless deer is harvested for every buck harvested. At the present time, achieving this 1:1 harvest ratio of bucks to antlerless deer may not be socially acceptable to hunters in northwest Montana. We consistently hear at public meetings that hunters want us to err on the side of caution when it comes to antlerless harvest opportunity in this part of Montana where deep snows are expected, out of concern for the overall population size.

In northwest Montana from 1960 to 1975, the harvest ratio of bucks to antlerless deer averaged 1 to 0.82, or within 18% of a 1:1 ratio, under a five-week either-sex regulation type. The average regional buck harvest was 3,214 for that period. Between 1976 and 1996, antlerless harvest opportunities were restricted to one week either-sex and later liberalized to only two weeks of either-sex hunting. The average regional buck harvest was 6,567 for that period and the harvest ratio of bucks to antlerless deer dropped to an average of 1 to 0.43. When antlerless harvest levels declined after hunting regulation changes in 1975 (departing from a near 1:1 harvest ratio), regional buck harvest began a steady 20-year climb. The maximum harvest ever achieved in northwest Montana was 10,689 bucks during the 1994 season. At first glance, more conservative antlerless harvest levels from 1976 to 1996 corresponded with an increasing buck harvest over a 20-year period, suggesting that more deer were present on the landscape. Throughout Montana, total buck harvest is often correlated with deer population size. We can only speculate whether this was due to increased numbers of does and/or increased production and survival of fawns in northwest Montana.

Analysis of entries from northwest Montana in the 12th edition of ***Montana Big Game Trophies*** also reveals some interesting information (see Table 2 on the following page). It should be noted that official measurers from the Boone and Crockett Club measure all of Montana's record book entries. For the period 1960 to 1975, when the average harvest ratio of buck to antlerless deer was within 18% of 1:1, 22 whitetail deer were entered into the book. Between 1976 and 1996, 61 bucks were entered into the Montana Book during a period of reduced buck to antlerless deer harvest ratios and strong population growth. Despite the decreased harvest ratio, whitetail deer trophies were entered into the Montana Book at approximately the same rate as earlier time periods when the ratio approached 1:1. However, the total number of trophies entered was greater during and after a period of conservative antlerless harvest opportunity. This may suggest that the potential to produce mature or trophy class bucks in northwest Montana is greater during periods of strong population growth while deer experience favorable climatic conditions, such as sequential mild winters. Dr. Kroll, in his book, even cautions that "all herd reductions on the northern periphery of the range should be carefully evaluated before implementation. Excessive removal of does from these herds may have long term negative impacts on the population dynamics and genetics of the herd."

As you might expect, there are many potential confounding factors that could have influenced whitetail populations. First, fire suppression at low elevations has enhanced the snow intercept capabilities of

TABLE 1
Age distribution of Northwest Montana whitetail deer bucks from tooth cementum annuli analysis of regional check station samples from 1995-2000 (values represent actual numbers of bucks sampled at northwest Montana hunter check stations).

Pictured here is Dwight Bergeron (MTFWP) pulling a tooth at the Highway 2 Kalispell check station during the 2000 season.

AGE CLASS	1995	1996	1997	1998	1999	2000
1.5	252	340	172	292	575	387
2.5	148	177	140	236	152	370
3.5	89	107	133	141	78	52
4.5	55	56	45	104	60	34
5.5	36	45	18	40	47	27
6.5	18	40	19	27	24	27
7.5	15	16	17	22	11	17
8.5	9	24	5	15	6	6
9.5	8	8	2	5	8	7
10.5	3	2	1	1	1	2
11.5	0	0	0	1	1	5
12.5	1	0	0	0	2	1
13.5	0	0	0	0	1	1
14.5	0	0	0	0	0	1

TABLE 2

Northwest Montana whitetail deer entries into the 12th Edition of Montana Big Game Trophy Book from 1960-1996 (160-0/8 to 199-2/8 = typical range, 185-7/8 to 241-7/8 = nontypical range). Pictured here is author Carolyn Sime measuring a whitetail buck at a check station near Kalispell, Montana.

TOTAL BUCK HARVEST					
1960s	1970-75	1976-79	1980s	1990-96	TOTAL
33,434	17,990	14,345	60,214	65,277	191,260
TYPICAL BUCKS ENTERED INTO MONTANA BOOK					
11	6	3	22	17	59
NON-TYPICAL BUCKS ENTERED INTO MONTANA BOOK					
3	2	1	9	9	24
TOTAL ENTRIES INTO THE MONTANA BOOK					
14	8	4	31	26	83
PERCENT OF HARVESTED BUCKS (X 100) ENTERED INTO THE MONTANA BOOK					
0.042	0.044	0.028	0.051	0.040	0.043

tree canopies on whitetail deer winter range. Habitat changes brought about through timber management activities may have also enhanced summer range conditions. A long series of mild winters, only punctuated with occasional severe winter seasons, probably resulted in higher overwinter survival of deer, in particular fawns. Hunter access has probably also increased across the region. While it is true that hunter numbers have increased since 1975 when harvest ratios approached 1:1 bucks to antlerless deer, hunter days expended per harvested deer (hunter effort) has actually decreased in the latter period. This may, again, suggest that QDM harvest objectives of 1:1 in coniferous forest environments at northern latitudes may not always be appropriate. Or more simply put, contrary to agricultural environments, whitetail deer populations on public and corporate timberlands at northern latitudes may not be able to sustain the 1:1 harvest objective, especially for the extended periods that QDM principles suggests. That being said, in northwest Montana where access is good and deer hunters are interested in applying QDM antlerless harvest principles to their hunting area, which antlerless deer should be taken and which should be deferred from harvest?

Antlerless deer include all females and six-month-old male fawns, commonly called "button" or "nubbin" bucks. Yearlings with antlers less than four inches are considered antlerless by legal definition in Montana. QDM advocates suggest two important objectives for harvesting antlerless deer. The first objective is to maintain or lower deer density and improve growth conditions for the entire herd, under the assumption that food and space are limiting factors for the population. We believe that the harvesting of antlerless deer has some habitat benefits at some undefined population level in our forested habitats. We have also experienced an economic carrying capacity if you will, relative to overall deer numbers and tree damage on corporate timberlands when deer populations, from their perspective, are too high. There are also some very important recreational and nutritional benefits to hunters that warrant maintaining antlerless deer hunting season opportunities when environmental conditions permit.

The second objective is to avoid harvesting male fawns, assuming that hunters can accurately discern male from female fawns. In some states, fawns can account for 20% of the total antlerless harvest. On private properties in the southeast or midwest regions of the country, harvesting buck fawns is not advised when the objective of QDM is to increase the number of mature bucks in the population. This could make sense for hunters up north as well, but the task of distinguishing a buck fawn from a doe fawn in brushy, timbered habitats where most hunters do not traditionally hunt from elevated tree stands will always be a challenge.

In northwest Montana, as we have stated previously, we believe that the forested mountain habitats provide secure habitats and help to maintain an adequate representation of mature bucks in the regional deer harvest annually, whether we are currently experiencing population lows or highs. However, hunters that can avoid harvesting buck fawns could theoretically contribute to higher buck numbers, as suggested by QDM principles. As a state wildlife management agency, this is a biological as well as an educational topic that we may need to explore. The harvest of buck fawns in any antlerless hunting season scenario will always be a concern, but the fact that hunting conditions in the northern forests are often very challenging, combined with the fact that we cannot see the forest (or deer) for the trees, will continue to be a benefit when it comes to buck habitat security during the fall hunting seasons.

It's been just over four years since the severe winter of 1996/97. Deep snow started piling up in mid-October and persisted until late May in Montana and throughout the Pacific Northwest. During those seven months, record-breaking amounts of snow fell in the valley bottoms of northwest Montana, and a significant portion of the whitetail herd may have perished in some local areas. For example in the Swan Valley, the combination of known hunter kill, large losses due to vehicle collisions along Highway 83, and heavier than normal overwinter mortality probably accounted for a 50 to 60% loss. Public and agency concern for low numbers of deer prompted the Fish, Wildlife & Parks Commission to adopt a buck-only hunting season structure from 1998 through 2000.

Before the severe winter of 1996/97, the standard whitetail deer hunting season in northwest Montana consisted of two weeks either-sex hunting followed by three weeks of buck only hunting. This standard two week either-sex hunting season was still markedly conservative and in sharp contrast to some agricultural and prairie habitat types in central and eastern Montana where

the standard season is still five weeks either-sex. This fall will be the first time we have offered either-sex whitetail deer hunting in northwest Montana since the 1997 season.

Quality deer management proponents often point out that these deer harvest principles are usually applied in areas where hunting pressure is high and the buck age structure is truncated because of poor recruitment to older age classes. This has not been the case in northwest Montana, where harvest rates are relatively low and dense vegetation provides good security for bucks. The evidence derived from *cementum annuli* aging techniques demonstrates that mature bucks persist in the population, despite increased numbers of hunters afield. Recent research in northwest Montana documented annual buck harvest rates of about 32%, based on a radio-marked sample of deer. Across a broader landscape, the harvest rate will vary, and could actually be lower in some areas based upon the age distribution derived from the harvested sample of bucks. In contrast, approximately 6% of the adult females are harvested annually in these coniferous forest habitats during a period when hunting regulations allowed two weeks of either-sex hunting opportunity. New and detailed information about whitetail deer ecology will shed more light on many of these topics following the completion of our Northwest Montana Whitetail Deer Research Project in the Salish Mountains northwest of Kalispell. The compilation and analysis of the data collected during this 10-year field research effort is underway as this article is published.

Finally, does QDM, or at least some components, have some potential benefits to the whitetail deer occupying the vast timbered public lands administered by the U.S. Forest Service and the corporate timberlands of northwest Montana? Perhaps. For now, and probably into the future, applying these principles will still be an individual choice based on your hunting traditions and desire to experiment with these emerging deer harvest principles individually. We would expect that QDM principles may not be supported by all hunters in northwest Montana because there is often strong social pressure against harvesting does and bucks anywhere close to a 1:1 ratio. From many northwest Montana deer hunters' perspectives, and indeed many professional wildlife biologists, major winter weather events will always loom on the horizon. The tendency to error on the side of caution when it comes to harvesting antlerless deer will probably always be a factor in management decisions. As always, the key to any successful wildlife management program in Montana, or anywhere for that matter, whether it is habitat conservation or hunting, is active hunter participation. Hopefully, the next time you pick up a hunting magazine that discusses the concepts of quality deer management, you too may entertain or explore some new options for your deer hunt in the coming season. And remember, your choices as an individual hunter have one of the most profound effects on herd size and composition. If older aged bucks are what you seek in your hunting area, take a hard look at what you select to harvest this season versus what you leave behind for next year. ▲▲▲

Montana Fish Wildlife and Parks Area Wildlife Biologist Tom Litchfield, based out of White Sulphur Springs, Montana, and Wildlife Mitigation Program Coordinator Dr. Alan Wood, based out of Kalispell, Montana, provided valuable insight into this topic and the preparation of this article.

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