

A CRITICAL REVIEW OF MULE DEER ANTLER POINT REGULATIONS, APPLICATION, AND EFFECTIVENESS

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INTRODUCTION/BACKGROUND

Sportsmen and professional wildlife managers are concerned about declining trends in mule deer throughout western North America (deVos, et al. 2003). The preponderance of evidence suggests landscape-scale changes in habitats since the 1950s are the leading cause, with no jurisdiction being excluded from the decline (deVos, et al. 2003). During the post-1950s era, significant change occurred in both predator and hunter management, but declines in the quantity and quality of mule deer habitats are generally considered by leading mule deer biologists to be the major driving force leading to the range wide decline. Despite the obvious connection between population trends and habitat conditions, hunters and managers continue to advocate other strategies such as harvest management schemes ranging from conservative buck-only seasons to antler point regulations. Too often, overly simplistic solutions are looked upon to fix very complex problems. Wildlife management agencies have devised and evaluated harvest management prescriptions for deer and elk as long as the wildlife management profession has existed. In fact, several management prescriptions have been attempted repetitively on what seems to be a cyclical basis, including the use of antler point regulations.

Antler point regulations (APRs) are a popular management scheme that is often advocated by sportsmen. The intended outcome is to exclude a segment of the male population from harvest in order to increase the proportion of males in the population and/or recruit additional mature males for harvest. The Wyoming Game and Fish Department and most other western state wildlife agencies have tried and evaluated various iterations of antler point regulations for cervids (primarily mule deer and elk) since the 1960s. Sportsmen generally believe APRs produce more and larger bucks. In practice APRs have been shown to reduce hunting pressure and temporarily increase total buck:doe ratios.

Interest in antler point restrictions has recently renewed among the hunting public in southwest Wyoming, resulting in this latest effort to evaluate the use of APRs to benefit mule deer and improve buck deer hunting. These regulations have generally been supported by sportsmen and some wildlife professionals as a way of boosting male:female ratios and as a mechanism to increase the number of “trophy” or older-aged males. Their thinking holds that limiting harvest by reducing hunter participation and protecting specific age classes will increase

the age, size (trophy status), and number of bucks in the population. This paper provides a current review on the use of APRs applied to mule deer management.

REVIEW OF ANTLER POINT REGULATION USE

Western states have applied APRs in two general forms to manage mule deer: 1) restrictions that protect younger age classes; and 2) restrictions that protect older (mature) males during general hunts. Examples of the former include “three point or better” seasons used by Colorado, Utah, Montana, Idaho, Washington, and Wyoming and “four point or better” seasons that have been used in numerous states. An example of the latter type are seasons that restrict general license hunters to harvest antlered deer with less than 3 points, coupled with limited quota licenses valid for antlered deer with greater than 2 points (this type of season has been used in portions of Idaho and Montana).

All APR strategies resulted in a short term gain in the proportion of males in the population. However, male:female ratios eventually returned to pre-APR levels after varying lengths of time, regardless whether the APR was continued. Most western states have concluded that sustainable improvements in buck:doe ratios and the number of mature bucks can only be realized by reducing harvest through: 1) a limited quota license system that decreases the total buck harvest while allowing some level of doe harvest (Bender 2011); or by setting a very short hunting season.

deVos et al. (2003) suggested that while APRs increase the proportion of bucks in a population, there is no evidence they substantially increase the total number of adult (mature) bucks. Further, increases in buck:doe ratios have never been shown empirically to improve either herd production or population size (deVos et al. 2003; Bishop et al. 2005).

USE OF ANTLER POINT REGULATIONS FOR MULE DEER BY STATE

COLORADO - Colorado implemented antler point restrictions for mule deer on a statewide basis for six years, and for a seven year period in several individual Game Management Units (GMUs). These seasons shifted hunting pressure to bucks greater than 2 years old. A marked increase in illegal or accidental harvest of yearling bucks was documented. However, the number and proportion of mature bucks did not increase.

IDAHO - Idaho implemented hunting seasons that limited harvest to bucks with 2 or fewer antler points (combined with limited quota seasons for bucks with 3 points or more on either antler) to reduce hunting pressure on older bucks and improve the post-season buck:doe ratios. Over the long term, these APR seasons did not improve post-season buck:doe ratios. However, there were temporary improvements in the proportion of adult bucks (>2 years old) during the first 2-4 years following APR implementation. After several consecutive years of increased pressure on yearling males, adult buck ratios returned to pre-treatment (or worse) levels. The eventual reduction of adult bucks resulted from dramatically reduced recruitment of yearlings into the adult buck classes.

Idaho also implemented a 4 point or better season in big game management unit 73 in the early 2000s to reduce hunter participation and crowding. The regulation was strongly backed by the public and resulted in an increased buck:doe ratio. However, after several years, the public became concerned about increasing number of large adult males with 3 point antlers. Complaints about hunter crowding continued during the time the APR was in effect and the area was eventually converted to an “unlimited controlled hunt structure” (hunters who select this area to hunt are precluded from hunting in other “general” areas, but “permits” are not limited).

UTAH - Utah has tried both ≥ 3 and ≥ 4 point seasons over a number of years in several GMUs. The Utah Division of Wildlife abandoned mule deer APRs after five years due to significant (>35% of total harvest) illegal harvest of yearling males, reduced total harvest, reduced hunter participation, shifting hunter distribution to areas without APR, and a reduction in harvestable mature bucks.

MONTANA – Montana has used ≤ 2 point seasons during a portion of the general season to protect adult males, and ≥ 4 point seasons to protect yearling males. Results of the ≤ 2 point seasons were similar to the Idaho experience: a temporary increase in mature bucks followed by a return to pre-APR ratios. Efforts to increase the number and proportion of mature bucks through ≥ 4 point seasons ended up reducing total buck harvest by 28%, while illegal harvest of bucks with ≤ 3 points increased nearly 40%. Harvest of legal bucks with ≥ 4 points did increase when compared to areas without APR, but personnel believed this was unsustainable. Montana personnel suggested this season structure could be detrimental to buck:doe ratios in areas with limited security cover (e.g. areas with extensive road networks).

WASHINGTON - Washington implemented APRs in selected mule deer, black-tailed deer, and/or white-tailed deer units (WDFW 2010). During APR use (which is still employed in some units), total harvest of mule deer bucks declined, and there was no increase in the number of mature mule deer bucks. In some cases harvest shifted from mule deer to white-tailed deer following implementation of APR. Total buck:doe ratios increased in conjunction with a lower total harvest of mule deer bucks. However, fawn recruitment had also increased in response to improved precipitation and habitat conditions, which complicated the analysis. WDFW concludes that APRs work to increase buck “escapement” from harvest when combined with a short season length.

OREGON – Oregon used an APR regulation to regulate mule deer harvest for several consecutive years in the popular Steens Mountain herd, and other wildlife management units. ODFW abandoned this regulation when the number of older bucks and overall buck:doe ratios decreased after 12 consecutive years of APR use. Significant illegal harvest of bucks ≤ 3 points was documented and the post-season proportion of bucks ≥ 4 points declined 30%. Additionally, legal harvest declined over 50%. Since APRs did not achieve the public’s desire for more and larger bucks, Oregon has since implemented a limited quota system to achieve management objectives for post-season buck:doe ratios in these herds (ODFW 2003).

HISTORY AND STATUS OF APRS FOR MULE DEER IN WYOMING

APRs have been employed as a harvest management tool numerous times over the past 40+ years in Wyoming. APRs have been applied in different parts of the state with an objective to increase total buck:doe ratios in herds that fail to meet management objectives. For mule deer, the harvest strategy was put in place to increase buck survival by limiting the segment of bucks allowable for legal harvest. The following examples summarize results of those efforts.

WGFD Cody Region

The Cody Region has a long history of running ≥ 4 point APR seasons in mule deer hunt areas. This season structure was used throughout a 12 year period in the Meeteetse area during the November general license season where total buck:doe ratios were below management objectives. Total buck:doe ratios increased initially. However, the regulation was eventually removed because the overall buck:doe ratios declined and the prevalence of older-aged 3 point deer increased after the regulation was in place several years. Misidentification and illegal harvest of ≤ 3 point males was also an issue. This season structure was also applied on a private ranch near Ten Sleep in an effort to accomplish the same goals. The Orchard Ranch used the 4-point regulation for several decades before similarly concluding it failed to maintain higher overall ratios and promoted survival of older aged “inferior” bucks (Kevin Hurley pers. comm.).

APR seasons have also been periodically used in the Upper Shoshone (McWhirter 2006a) and Clarks Fork (McWhirter 2006b) herd units near Cody to increase total buck:doe ratios. In the Upper Shoshone, a ≥ 4 point season was implemented most recently from 2003-05. Yearling buck:doe ratios did not respond favorably the first year due to poor fawn recruitment from 2002. However, the proportion of yearling bucks improved the following year due to improved fawn recruitment from 2003. Cody personnel observed no increase in the proportion of adult bucks during this period, but the overall buck:doe ratio did increase. Protection of yearling males shifted all hunting pressure to ≥ 2 year-old bucks, and the proportion of mature bucks declined during the use of APRs.

A four point or better season in the Clarks Fork herd yielded results similar to those observed in the Upper Shoshone. While yearling male ratios increased during the period the APR was employed, mature buck ratios declined and the regulation produced no increase in the overall buck:doe ratio. Following removal of the APR, the buck:doe ratio was maintained by shortening the general season length. However, personnel recognized a more conservative season structure (e.g. limited quota) may be necessary to reach management objectives for mature bucks and fulfill a segment of the public’s desire regarding management of this herd.

The Cody Region also set ≥ 4 point hunting seasons in the former Nowood Mule Deer Herd Unit (Hunt Areas 35 and 39; now a portion of Southwest Bighorns Mule Deer) in

combination with antlerless deer seasons from 1984-1989 (Harju 1989) in response to public concerns about low buck:doe ratios. Prior to 1984, this herd was managed under a general antlered deer season and 150-300 antlerless deer licenses were also issued annually. The goal of the ≥ 4 point season was to increase the overall buck:doe ratio. The APR season prompted a dramatic decline in both hunter numbers and buck harvest, as has also been documented in several other states and other locations in Wyoming. In the Nowood herd, the overall buck:doe ratio and proportion of mature bucks actually declined after APR implementation but improved as hunter participation fell and harvest success remained low. This season structure was changed back to an “any deer” season in 1990. These results differ from most reviewed and suggest sampling design may have played a role given mule deer interchange and changing distribution (this “herd” was determined to be a small sub-population of a much larger herd)

WGFD Lander Region

The Lander Region used ≥ 4 -point APRs in Hunt Areas 91-97 and Hunt Area 160 (South Wind River and Sweetwater Herd Units in 2004 and 2005 (Harter 2005a; Harter 2005b). These seasons were put in place for a two year period to increase the total buck:doe ratio, which had declined below objective after several years of severe drought and declines in fawn recruitment. The use of APR seasons worked well in both cases and overall buck:doe ratios recovered to the management objectives. As expected, yearling buck:doe ratios improved markedly during both years, and subsequent recruitment to older age classes increased. Both hunters and harvest declined in conjunction with the APR seasons. During the years the APR seasons were in place, fawn recruitment also increased in response to improved habitat conditions. This led to even greater yearling recruitment and survival. Overall buck:doe ratios more than doubled from lows of 13 and 14 bucks:100 does in 2002, to 29 and 31 bucks:100 does in 2005, respectively.

During the APR season in these two herds, personnel documented a few ≤ 3 point bucks killed and abandoned, or at check stations. Overall, personnel considered regulation compliance to be good. As expected, most of the 2004 and 2005 harvest consisted of younger aged ≥ 4 point bucks (2 and 3 year olds). Personnel also noted an increase in older aged class males in both herd units following improved habitat conditions and reduced hunting pressure and harvest. Total buck harvest in 2009 was nearly quadruple of that observed in 2004. Total buck:doe ratios have remained in the mid to upper 20s:100 without APRs in place since 2005. However, it was a combination of APR seasons, improved fawn production/recruitment, and lower buck harvest that yielded the results observed in the Lander Region.

WGFD Green River Region

The Green River Region has used APRs in two herds. In the South Rock Springs Herd APRs were implemented in the 1970s. However, few records are available from that era to

evaluate their effect. According to past managers, the regulation coincided with low hunter numbers. In addition, security/escape habitat was more prevalent and hunters were less mobile because there were fewer roads and no modern ORVs. Hunting was reportedly very good during those years but it is unclear what if any influence APRs may have had.

In the Green River Region, APR regulations are currently used in the Uinta Deer Herd, specifically in Hunt Area 132 (Short 2010). The area's xeric habitats are less productive and heavily roaded with very limited security/escape habitat. A four-point or better regulation was initially begun in 2007 and 2008. In 2009 the regulation was modified to three-point or better and has remained in place since then. Hunt Area 132 is currently the only area in Wyoming with an APR for mule deer. During the initial year of the regulation, the Department developed criteria to limit the length of time the APR would be in place based on achieving a specific objective for buck:doe ratios. However, a vocal local public have opposed removing the APR. The Uinta Deer Herd is managed as a "recreational" deer herd with a post-season target of 20-29 bucks:100 does. Personnel proposed returning to a general antlered deer season after observed ratios met or exceeded 25:100 for two consecutive years in Hunt Area 132. Conversely, if the buck:doe ratio fell below the recreational range midpoint (25:100) for two consecutive years, the point restriction would be reinstated.

Results of the Area 132 APR are not as clear cut as observed in some other areas. The hunt area boundaries were changed during 2009, making direct comparisons over time somewhat problematic. Additionally, herd classifications (mostly done from the ground) did not meet adequate samples during many years prior to 2007. Since then, increased flight budgets have provided additional data collection. Hunter participation and harvest declined 30% and 45%, respectively the year APR was initiated (2007), which is consistent with what we have observed in other areas. Since then, harvest and hunter numbers may have rebounded to pre-APR levels, but the hunt area boundary change, which added more productive habitat along the Blacks Fork River and Bigelow Bench, likely contributed to this. Personnel have not observed a significant increase in participation or harvest in the original hunt area east of Highway 414. The first year of APR implementation coincided with better fawn production than had been seen for a several years. The proportions of yearling bucks appear to have increased following years with improved fawn production, but overall buck:doe ratios are similar to pre-APR years. Fawn production has varied, but generally decreased since the first year of the APR. Public support for this regulation remains very strong.

Wyoming Summary

Wyoming has considerable experience with the use of APRs for mule deer management. The following excerpt from page 18 of the Wyoming Mule Deer Initiative plan notes some of the key issues with APRs (specifically ≥ 4 -point regulations; WGFD Mule Deer Working Group, 2007)

“A harvest strategy sometimes employed to improve depressed buck:doe ratios is a “four-point or better” hunting season. It may seem counterintuitive, but antler point restrictions do not necessarily produce more large bucks. In a ≥ 4 point season, the hunter is restricted to harvesting bucks with 4 points or more on either antler. Consequently, all harvest pressure is redirected to the largest deer in the population, which reduces their number. Since most yearlings and some 2-year old bucks are protected until they become small 4-point deer, the overall ratio of bucks to does will increase somewhat as a result of having more young bucks in the population. However, harvest is merely delayed until a buck grows its first set of 4-point antlers. The maximum benefit of a 4-point season is typically realized after the season has been in place 2 or 3 years, at which time most 4-point bucks are being harvested. Thereafter, the buck:doe ratio does not continue to increase and fewer bucks actually survive to grow truly large antlers. Over the long-term, persistently targeting large bucks may also eliminate desirable genetics (the ability to grow large antlers) from the population. If the objective is to produce more large deer, the 4-point restriction must be lifted after 2 years so harvest is once again spread over more age classes. This allows more of the incoming cohort of 4-point bucks to survive to an older age and potentially grow much larger antlers. Should the overall buck:doe ratio again decline to an unacceptably low level, the ≥ 4 point season can be reinstated for another 2-3 years to augment the number of bucks in the population, and the process is repeated. Permanent ≥ 4 point seasons do not produce more large bucks and actually reduce the harvestable surplus because some of the younger bucks that could have been harvested will die from other causes before they grow 4-point antlers. In addition, some small bucks are mistaken for legal bucks and are illegally killed and abandoned. Those deer represent a resource that is lost from the population and impact hunter opportunity in future years.”

CONCLUSION

Antler Point regulations have been referred to as a prescription for ailing deer and elk management, without a clear understanding of the disease (Carpenter and Gill, 1987). As is typical with most wildlife management, overly simplistic solutions are often sought for circumstances in which we lack the capability (or understanding) to influence.

Several observations from our analysis of APR use in Wyoming and throughout the west are summarized below:

- APRs **DO** increase total buck:doe ratios; **however** results vary and are usually temporary.
- APRs are very popular with the hunting public. However public understanding of the pros and cons appears to be limited, and is complicated by popular literature concerning APRs.
- Most benefits occur in ≤ 3 years; use of APRs beyond this often appear to result in negative impacts to both total buck ratios and mature buck ratios. Continued long term use of APRs (≥ 3 -4 years) may result in lower total male:female ratios.
- No APR strategy produced a long-term increase in adult (mature) male:female ratios, or an increase in the number of adult bucks, except in a handful of cases where hunter participation declined significantly, coupled with good fawn production.

- Temporary APRs are most effective following a year of high fawn production and recruitment or when doe harvest is increased.
- Managers have found most effective way to recover from chronically low buck:doe ratios is through a dramatic reduction in harvest pressure on males ≥ 2 years of age (through a conservative limited quota season or very short season length). Available data also tends to support this.
- APRs have been shown to reduce the number and potentially the quality of mature bucks over time.
- Long-term use of APRs may target legal bucks that have not realized their full antler growth potential while protecting bucks with low antler growth potential (i.e., hunters select against legal bucks with smaller antlers). Although not validated by research, this is a concern among wildlife professionals and the public.
- APRs may dramatically reduce hunter participation, harvest success, and total harvest.
- APRs increase the number of deer shot and illegally left in the field; this can be significant and has been documented in Wyoming, Colorado, Utah, and Montana.
- APRs do not increase fawn production or population size. Even in herds with single-digit buck:doe ratios, pregnancy rates are well over 90%. Large increases in buck ratios result in relatively few additional fawns (White et al. 2001). The extent to which relative proportions of yearling and mature bucks influence timing of conception and fawn recruitment/survival needs further evaluation.
- Some APRs displace hunting pressure to the oldest age classes of bucks, gradually eroding that segment of the population. Others reduce recruitment to older age classes by displacing harvest pressure to yearling males.
- APRs may decrease interest of hunters whose primary motivation is to obtain meat.
- APRs may discourage beginning and young hunters by increasing the difficulty of locating and identifying legal deer.
- Long-term use of APRs in areas with limited security/escape habitat potentially impedes maintenance of publically acceptable total and mature buck:doe ratios.
- Empirical studies of APR regulations have not been conducted. We recommend this become a priority research topic for the WAFWA.
- APRs should be viewed as a legitimate management tool in areas with chronically low male:female ratios provided they are applied on a time-limited basis. Managers and the public are cautioned that available data and experience suggest APRs result in no long term increase in either the proportion or number of **mature** bucks, or the total deer population.

While the data suggests APRs definitely increase **total** buck ratios, at least temporarily, they **do not** appear to increase the number or ratio of adult bucks in the population, quite the contrary when used over a long period of time. They may increase mature bucks only when hunter participation falls significantly enough to dramatically reduce overall buck harvest, similar to that seen under a conservative limited quota scenario. Long-term APR use has also been shown to reduce the percentage of Class II (20-25") and Class III (>25") bucks in the population. APRs typically reduce hunter participation, harvest, and hunter success, sometimes dramatically. The harvest data from Wyoming's Area 132 contradicts other harvest data sets from areas with APRs given continued increases in hunter participation, harvest, and success,

and reduced hunter effort. However, as mentioned above, addition of a significant and more productive area to Hunt Area 132 may have resulted in these observed increases in hunter statistics.

Part of the belief these regulations will work among sportsmen is linked to an assumed perception of reduced vulnerability of males to harvest once they are successfully recruited to the older age classes. While reduced vulnerability to harvest definitely occurs at some level, the data suggests it is not enough to prevent reductions in these age classes under most scenarios evaluated. Also, heavily roaded hunt areas may not provide security habitats necessary for older aged mule deer to escape harvest, despite increased experience. Additionally, there is a misperception that an APR won't allow for younger aged animals to be harvested, when in fact many young-aged cervids (often the "best" genetically) meet the minimum restriction for number of points and can be legally harvested.

TABLE 1. Use of APR restrictions, APR type and results, western U.S.

STATE	APR TYPE	TOTAL BUCK RATIOS?	MATURE BUCK RATIOS?	HUNTER NUMBERS	TOTAL HARVEST	TOTAL POPULATION INCREASE FROM APR?	HUNTER COMPLIANCE
Colorado	≥4 points	Temp increase	No improvement	Unknown	Decrease	No	Poor
Idaho^a	≤2 points + LQ for ≥3 points males	Long term no improvement	Temporary improvement followed by decreased adult buck ratios	Decrease	Decrease	No	Unknown
Idaho^b	≥4 points	Temporary increase	Regulation resulted in promotion of older aged 3 point deer	Neutral	Decrease	No	Unknown
Utah	Variable, ≥3 points or ≥4 points	No long term improvement	Decrease	Decrease	Decrease	No	Poor ≥35% illegal harvest
Montana^a	≤2 points last two weeks of five week season	Long term no improvement	Temporary increase followed by pre APR adult buck ratios	Decrease	Decrease	No	Poor to Fair
Montana^b	≥4 points	Temporary increase	Decrease	Decrease	Decrease in total harvest by 28% but increase in mature buck harvest	No	Poor 31-42% reported increase in illegal harvest

TABLE 1. Continued.

STATE	APR TYPE	TOTAL BUCK RATIOS?	MATURE BUCK RATIOS?	HUNTER NUMBERS	TOTAL HARVEST	TOTAL POPULATION INCREASE FROM APR?	HUNTER COMPLIANCE
Washington	≥3 points	Increase	No improvement	Neutral; significant switch to white-tailed deer hunting	Decrease in mule deer harvest	No	Unknown
Oregon	≥4 points	Decrease	Decrease	Decrease	Decrease by 50%	No	Poor – illegal harvest was “significant”
Wyoming – Meeteetse	≥4 points	Temporary increase, then reduction	No improvement; personnel believed promoted genetic “worsening” of antler form (selecting for older 3 points)	Decrease	Decrease	No	Poor
Wyoming – Nowood Mule Deer	≥4 points	Initial decrease then increase	Initial decrease then increase	Decrease	Decrease	No	Fair
Wyoming – Upper Shoshone Mule Deer	≥4 points	Temporary increase	Decrease	Decrease	Decrease	No	Unknown
Wyoming – Clarks Fork Mule Deer	≥4 points	Temporary increase	Decrease	Decrease	Decrease	No	Unknown
Wyoming – Sweetwater Mule Deer	≥4 points (2 years)	Temporary increase	Temporary improvement	Decrease	Decrease	No	Fair

TABLE 1. Continued.

STATE	APR TYPE	TOTAL BUCK RATIOS?	MATURE BUCK RATIOS?	HUNTER NUMBERS	TOTAL HARVEST	TOTAL POPULATION INCREASE FROM APR?	HUNTER COMPLIANCE
Wyoming – South Wind River Mule Deer	≥4 points (2 years)	Temporary increase	Temporary improvement	Decrease	Decrease	No	Fair
Wyoming – Uinta Mule Deer (Area 132)	≥4 points (two years) followed by ≥3 points (two years)	Increase, temporary? Ongoing use.	Increase, but so did adjacent areas without APR	Initial decrease – see discussion	Initial decrease – see discussion	No	Fair

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