

Wyoming Game and Fish Department



RECOMMENDED STRATEGIES TO MANAGE MULE DEER HUNTING



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EXECUTIVE SUMMARY

The Mule Deer Working Group (MDWG) and Resident Region Committee (RCC) combined efforts to develop information and recommendations presented in this report. The framework and baseline information originated from a prior Wyoming Game and Fish Department (WGFD) white paper that evaluated management issues affecting quality of mule deer hunting in Wyoming (MDWG 2006). Since 2006, WGFD has facilitated several Mule Deer Initiative (MDI) processes to address local management concerns in key herd units across the State. This report presents relevant information and input obtained through the MDI processes. Results from three deer hunter attitude surveys (2006, 2012 and 2017) are also considered in our analysis and recommendations. White papers pertaining to antler point restrictions and white-tailed deer management are appended to provide additional supporting information.

The heart of this report is a review of the WGFD's current deer management framework and a detailed evaluation of alternative strategies we considered to potentially improve mule deer management and hunting quality in general hunt areas. *After thorough review and analysis, the consensus of the report committee and our preferred course of action is to maintain the existing system of deer management, license issuance, and hunting season strategies in Wyoming.* The current system provides a range of limited quota and non-limited quota (general) hunting opportunities, and addresses the diverse preferences and expectations of our constituency.

Nine other strategies are identified for consideration as possible alternatives to the existing season and license structure. Advantages and disadvantages of each are summarized. The report committee selected three strategies that seem best suited to accommodate hunter preferences if a change from the existing season structure is given further consideration. The three strategies were selected primarily because they allow general license hunting for mule deer to continue on some level. The three strategies include:

1. Further standardization of opening dates on a statewide or regional basis;
2. General and limited quota license seasons within the same hunt area; and
3. Split general license seasons.

The report committee believes ample opportunity for general license deer hunting is invaluable to support hunter recruitment and retention. It is important to note the alternative strategies identified to address various concerns about hunting quality also come at a cost – all will result in at least some loss of deer hunting opportunity. Managers contemplating strategy changes at the local or regional level need to consider not only the impact in their respective areas, but also the incremental effect on other regions' ability to continue general license hunting opportunities at a statewide scale. Ultimately, the success of any change to the current management system will hinge upon the capability of WGFD to engage the broader hunting public and obtain their support.

INTRODUCTION

Hunting quality and season frameworks have become increasingly controversial facets of deer management since the 1980s. Some interests now advocate most or all general license hunt areas should be converted to limited quota license hunt areas in order to reduce hunter densities, improve success, and sustain higher proportions of mature bucks. It can be difficult to gauge whether these sentiments represent majority or minority preferences of the deer hunting community. It is also not uncommon for hunters to advocate contradicting management goals such as inexpensive licenses, minimal competition with reduced license issuance, excellent opportunity to shoot a large-antlered buck, and the opportunity to hunt most years in a preferred area. In addition, individual perceptions of “quality” are often shaped by differing perceptions of the hunting experience, such as the number of deer seen, harvest success, buck:doe ratios, availability of mature bucks, hunter densities, timing and length of hunting seasons, access, recreational values, ATV intrusions, and other aesthetic or social considerations.

The Wyoming Game and Fish Department (WGFD) implemented the Wyoming Mule Deer Initiative (MDI) in ten key herd units throughout the state (Fig. 1). The MDI utilized a collaborative public involvement process wherein the public and WGFD share information and ideas regarding issues affecting these herds. The goal is to allow participants to fully engage in the process, learn from each other, and work toward appropriate management strategies that address local or regional issues. This aspect of the MDI was particularly important as WGFD engaged constituents after the severe winter of 2016-2017 and its impact on mule deer in western Wyoming. Management plans for each of the ten MDI herd units have been finalized and are being implemented.

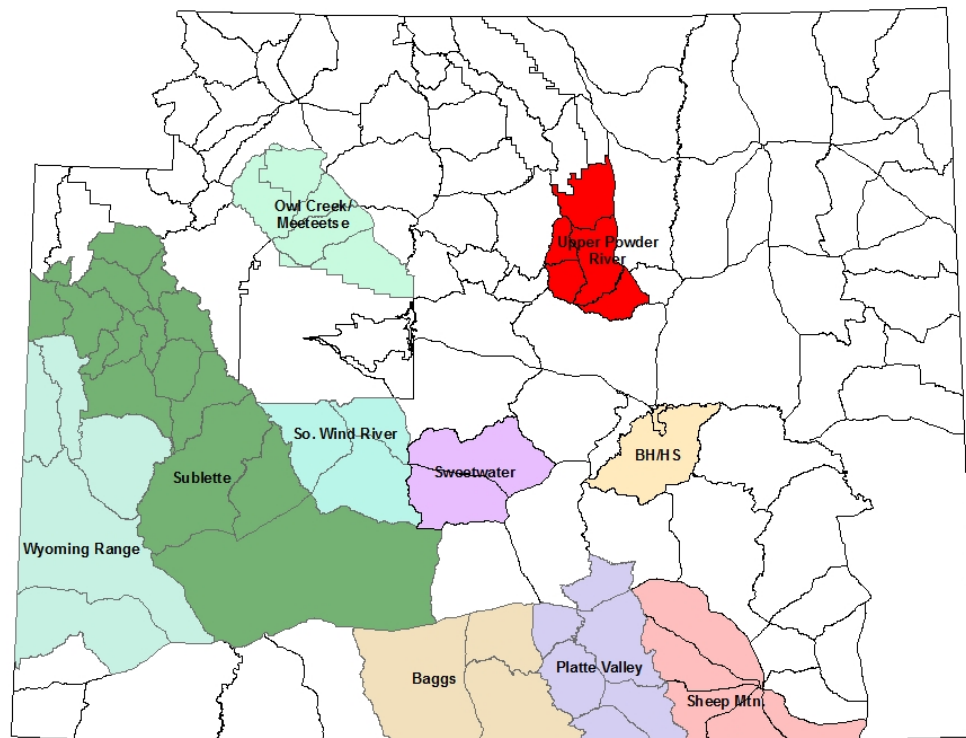


Fig. 1. Herd units identified for the statewide “roll-out” of the Wyoming Mule Deer Initiative

WGFD's Mule Deer Working Group (MDWG) previously compiled a list of alternative management strategies (WGFD 2006) and developed a resident region concept (WGFD 2014) to provide options for addressing many facets of hunter attitudes and opinions towards mule deer management. Recently, a separate WGFD Resident Region Committee (RRC) independently analyzed the resident region concept and recommended against implementing a general license deer region system for resident hunters in Wyoming (WGFD 2017).

The purpose of this report is to further explore previously identified and other possible strategies for managing mule deer in Wyoming. Direction provided by Wildlife Division administration was to provide:

".....other options to address population and hunter management including the comparison of general and limited quota season structures, the value and efficacy of antler point restrictions, white-tailed vs. mule deer management (separated or status quo) and any other options the group may come up with. I ask that you provide at least two, but no more than 5, courses of action for consideration by other wildlife managers across the state. Those courses of action should include your analysis and a recommendation for your group's preferred option and why. All options identified by the group should address the pros and cons of each." (Memo from Brian Nesvik, Wildlife Division Chief – Appendix 1)

This report analyzes pertinent data from mule deer hunter attitude surveys, provides a synopsis of the WGFD's current deer management framework, and explores alternative management strategies for consideration by wildlife managers across the state.

SYNOPSIS OF DEER HUNTER ATTITUDE SURVEYS

To objectively gauge current perceptions of deer hunters, the WGFD recently conducted a statewide random survey entitled, “Wyoming Resident Mule Deer Hunters’ Opinions on Mule Deer Hunting and Mule Deer Management: 2017 Update” (Responsive Management 2017). Similar surveys were completed in 2006 and 2012 (Responsive Management 2006; Responsive Management 2012). Both resident and nonresident hunters were sampled by the 2006 and 2012 surveys. The 2017 survey sampled resident hunters only. Survey results relevant to consideration of options for hunting season frameworks were considered. Comparable questions asked across all three surveys enable us to detect consistencies and changes in hunter attitudes through time. We report resident and nonresident responses separately and in aggregate form as appropriate to our analyses and are described in detail below. A condensed side-by-side comparison of the survey responses is provided (Table 1).

Opinions on Hunting Quality and Hunter Satisfaction

- In 2017, 60% of deer hunters indicated WGFD is doing a good or excellent job of managing deer, compared to 56% in 2012 and 68% in 2006. In 2017, 12% of resident deer hunters felt WGFD is doing a poor job at managing deer, compared to 14% in 2012 and 8% in 2006.
- In 2017, 79% of mule deer hunters were satisfied or very satisfied with their mule deer hunting in Wyoming whereas 16% were dissatisfied or very dissatisfied. Those who gave a “satisfied” rating most commonly indicated there were plenty of mule deer, they enjoy the outdoors/getting away, or they were successful in harvesting a mule deer. Those who gave a “dissatisfied” rating most commonly cited a perceived lack of mule deer (by far the most common response), too many hunters, not enough trophy mule deer bucks, or unsuccessful harvesting.
 - The 2012 survey reported 74% satisfied and 22% dissatisfied. Of those who were dissatisfied, 73% stated it was because there were not enough mule deer. A perception of not enough trophy bucks and dislike for regulations or management were also cited, the latter being more prevalent.
 - In the 2006, 84% were satisfied and 14% were dissatisfied. The 2006 survey did not ask the reasons underlying the level of satisfaction.
- In 2017, 60% of mule deer hunters indicated the quality of their mule deer hunt had remained the same or improved, whereas 35% said it had gotten worse.
 - In 2012, 43% indicated the quality of their deer hunt was the same or improved, whereas 47% indicated it had gotten worse.
 - In 2006, 57% indicated the overall quality of their hunt stayed the same or improved while 24% stated it was worse.
- The 2017 survey presented a list of six factors a hunter might consider in describing a quality mule deer hunt. Respondents were asked to select all that apply. The top answers were outdoor experience (61%), success harvesting an animal (59%), and the opportunity to spend time with family/friends (59%).
 - In 2012, 47% of respondents selected outdoor experience followed by opportunity to spend time with family/friends (43%) and harvest success (38%).
 - In 2006, 65% selected outdoor experience followed by opportunity to spend time with family and friends (63%) and recreation (57%).

- Hunters were asked what size of mule deer antlers factored into their consideration of hunting quality. In 2017, 59% of respondents indicated at least 4 points on one side is the threshold for a mule deer buck to be considered a quality buck. Another 21% indicated a minimum of 5 or 6 points on one side were needed to be a quality mule deer buck. An antler spread of 26 inches was considered a quality mule deer buck in 2017.
 - In 2012, 65% indicated 4 points on one side are needed to be considered a quality mule deer buck. Another 21% believed 5, 6 or more points are needed. An antler spread of 24 inches was considered a quality mule deer buck in 2012.
 - In 2006, 70% stated 4 points was the minimum on one side to be considered a quality mule deer buck. Another 12% believed 5, 6 or more points are needed. An antler spread of 22 inches was considered a quality mule deer buck in 2006.

Mule Deer Hunting Location Information

- In the 2017 survey, resident hunters were evenly distributed regarding the number of miles they are willing to travel to hunt mule deer. Approximately 25% selected a range of 0-50 miles, 25% selected 51-100 miles, and 25% selected 101-250 miles. The remaining 25% indicated their willingness to go farther or they did not know. In 2017 the mean distance mule deer hunters would travel was 128 miles and the median was 100 miles.
 - In 2012, the breakdown was: 30% at 0-50 miles, 27% at 51-100 miles, 28% at 101-250, and the remaining 15% were either willing to go further or did not know. The mean distance mule deer hunters would travel was 126 miles and the median was 100 miles.
 - A similar question was not asked in the 2006 survey.
- In 2017, 45% of resident general license hunters reported they typically hunt in only one hunt area in a given year.
 - In 2012, 38% (includes both general and limited quota license hunters) only hunted in one hunt area in a given year.
 - In 2006, 62% (includes both general and limited quota license hunters) stated they only hunted in one hunt area the previous season.
- In 2017, 24% of resident general license hunters indicated they typically hunt three or more hunt areas.
 - In 2012, 28% (includes both general and limited quota hunters) typically hunted three or more hunt areas.
 - In 2006, only 11% (includes both general and limited quota hunters) hunted in three or more hunt areas the previous season.

Opinions on Season Structure

- In 2017, deer hunters continued to express a preference for general license seasons (50%) over limited quota seasons (32%). The most common reasons for preferring general license seasons were the ability to hunt in more hunt areas and being able to hunt every year. The most common reasons for preferring limited quota license seasons were a perception of less hunter crowding, better quality deer, a better way of managing mule deer, and a better chance of harvesting a deer.
 - In 2012, 45% of hunters expressed preference for general license seasons and 40% preferred limited quota license seasons.
 - In 2006, 54% preferred general license seasons and 29% preferred limited quota license seasons.

- In 2017, a majority of mule deer hunters (60%) indicated it is *very* important to be able to hunt mule deer every year in Wyoming. Another 30% indicated it is *moderately* important, totaling 89% indicating it is important.
 - In 2012, 86% of hunters indicated hunting every year was moderately or very important.
 - In 2006, 73% of hunters indicated this was moderately or very important.
- In 2017, just over half of mule deer hunters (55%) would support limiting the number of hunters in the field, even if it would make it less likely they would draw a license every year; otherwise, 30% would oppose.
 - In 2012, 65% of hunters indicated they would support limiting the number of hunters in the field.
 - In 2006, 54% of hunters indicated they would support limiting the number of hunters in the field.
- Opinions were generally split on the acceptability of hunting in only one hunt area versus multiple hunt areas in a given year. In the 2017 survey, 47% said it would be acceptable to be able to hunt in only one hunt area, while 43% said this would be unacceptable. When responses were reported separately for general versus limited quota license holders 45% of general license holders and 43% of limited quota license holders indicated it would be acceptable or very acceptable.
 - In 2012, 54% reported it would be acceptable with 41% stating it would be unacceptable.
 - A comparable question was not asked in 2006.
- Opinions in the 2017 survey were split regarding whether it would be acceptable to have limited quota license seasons in all hunt areas in Wyoming: 43% said it would be acceptable, whereas 46% said it would be unacceptable.
 - In 2012, 55% of hunters indicated it would be acceptable to have statewide limited quota licenses whereas 36% said it would be unacceptable.
 - A comparable question was not asked in the 2006 survey.
- Half (50%) of mule deer hunters in the 2017 survey supported a season structure wherein residents would be required to select a region to hunt, whereas 38% opposed the idea. When responses were reported separately for general versus limited quota license holders 49% of general license holders and 51% of limited quota license holders indicated they would support a resident region season structure.
 - In 2012, 63% of hunters supported this concept, 31% opposed it.
 - In 2006, only 32% indicated this idea would be acceptable.
 - The 2017 survey asked this question a second time after the following information was given to survey respondents: “*winter conditions during the 2016-2017 winter resulted in severe winter losses to mule deer populations in western Wyoming. Fawn losses as high as 90% and adult losses of approximately 30% occurred in the Wyoming Range and Sublette mule deer herds. A hunting season structure in which residents would obtain a regional general license that would require them to select a region of the state to hunt would not necessarily accelerate a mule deer population recovery; however, it would likely reduce the number of hunters in the field and offer better quality hunting experiences.*” In the “post” information question, the proportion of hunters supporting the concept increased to 60% while those opposed decreased to 30%. However, this follow

up question may have biased responses because assumptions of improved quality and fewer hunters may not be true.

- An overwhelming majority of mule deer hunters (86%) would consider delaying their hunt until later in the season if there was a chance of encountering fewer hunters after opening day; 11% would not consider it.
 - In 2012, 82% of hunters indicated they would consider delaying their hunt and 14% would not consider it.
 - This question was not asked in the 2006 survey.

Summary of Deer Hunter Attitude Surveys (2006, 2012 and 2017)

Hunter attitudes pertaining to mule deer management remained comparatively similar among the three survey periods. Contradicting responses (e.g. support for limiting hunters in the field while also preferring to draw a license every year) also appear across years. Survey questions that lead to self-contradicting responses illustrate the need to better articulate implications of various season structure scenarios when soliciting public opinion. Regardless, the majority of deer hunters in Wyoming feel WGFD is doing a good or excellent job with deer management. This is an important context to bear in mind when attempting to evaluate the survey responses.

The majority of hunters continue to prefer general license seasons over limited quota license seasons, primarily for the opportunity to hunt every year and in multiple areas. A majority of hunters also support strategies that are inconsistent with general license seasons, including limiting the number of hunters in the field and limiting hunters to one hunt area. Support for limited quota license seasons statewide was variable; the 2017 results were split (43% supported, 46% opposed), while a majority supported (55%) vs. opposed (36%) in the 2012 survey which was conducted after a hunting season with lower harvest success. Finally, opinions have vacillated regarding the acceptability of resident general license deer regions, with 50% supporting in 2017, 63% supporting in 2012, and only 32% supporting in 2006.

Considerations associated with a quality mule deer hunt were similar in all three surveys and included harvest success, spending time with family/friends, and having a good outdoor experience. Most hunters continued to regard 4 antler points on one side as indicative of a quality mule deer buck, whereas preferred antler spread increased from 22 inches in 2006 to 26 inches in 2017.

Table 1. Comparison of survey responses.

Question Response Category		Responses by Survey Year		
		2017	2012	2006
WGFD doing a “good” or “excellent” job managing mule deer		60%	56%	68%
WGFD doing a “poor” job managing mule deer		12%	14%	8%
“Satisfied” or “very satisfied” with hunting experience		79%	74%	84%
“Dissatisfied” or “very dissatisfied” with hunting experience		16%	22%	14%
Reasons for being dissatisfied		Not enough deer Hunter crowding Not enough trophy deer Unsuccessful harvesting	not enough deer (73%) not enough trophy deer dislike management dislike regulations	N/A
Hunt quality	Same/improved	60%	43%	57%
	Has gotten worse	35%	47%	24%
Quality hunt factors	Outdoor experience	61%	47%	65%
	Harvest Success	59%	38%	—
	Family/Friends	59%	43%	63%
	Recreation Value	—	—	57%
Quality buck antler size & spread	4 points	59%	65%	70%
	5-6 points	21%	21%	12%
	spread	26 inches	24 inches	22 inches
Distance willing to travel to hunt	0-50 mi	25%	30%	N/A
	51-100 mi	25%	27%	
	101-250 mi	25%	28%	
	>250 mi or unk	25%	15%	
	mean distance	128 mi	126 mi.	
No. areas typically hunted	One area	45% (resident general)	38% (general & LQ)	62% (general & LQ)
	Three or more areas	24% (resident general)	28% (general & LQ)	11% (general & LQ)
Season type preference	General	50%	45%	54%
	Ltd Quota	32%	40%	29%
Hunt every year is very or moderately important		89% (60% said very important)	86%	73%
Limit No. hunters even if can’t hunt every year		55% (30% would oppose)	65%	54%
Hunt in only 1 area each year	Acceptable	47% (45% of gen license holders)	54%	N/A
	Unacceptable	43%	41%	
Ltd quota statewide	Acceptable	43%	55%	NA
	Unacceptable	46%	36%	
Resident gen regions	Support	50%	63%	32%
	Oppose	38%	31%	—
Consider delaying hunt to reduce crowding	Yes	86%	82%	N/A
	No	11%	14%	

The majority of hunters are reasonably satisfied with existing management but not unexpectedly, there is interest in improving numbers and average size of mule deer bucks, and to some degree in reducing hunter densities. However, most resident hunters wish to maintain their ability to hunt every year, near home, and in several hunt areas. Although resident hunters indicated they may be willing to give up some opportunity in order to produce more and larger mule deer bucks, the prevalent response is the numbers and size of mule deer bucks are considered adequate and most hunters favor retaining general licenses and the ability to hunt every year.

The 2012 and 2017 surveys contained some notable differences in response to questions typically associated with hunter satisfaction, quality of hunting, satisfaction with WGFD's mule deer management, and what constitutes an adequate number of mule deer bucks. However, it is important to consider the 2012 survey was conducted following a time frame when mule deer populations were at their nadir throughout most of the State, whereas the 2017 survey was conducted at a time when most mule deer populations had rebounded (Fig. 2). Mule deer population size and hunter effort prior to each attitude survey likely influenced responses to the surveys. Lower success and higher effort in 2011 likely contributed to lower overall satisfaction and increased receptiveness to conservative management strategies expressed in the 2012 attitude survey. Although the 2016-2017 winter had severe impact on the Sublette and Wyoming Range deer herds, respondents to the 2017 survey likely based their perceptions on their hunting experience during fall of 2016. Had the survey been conducted after the 2017 hunting season, it is likely responses would have been more similar to those of the 2012 survey.

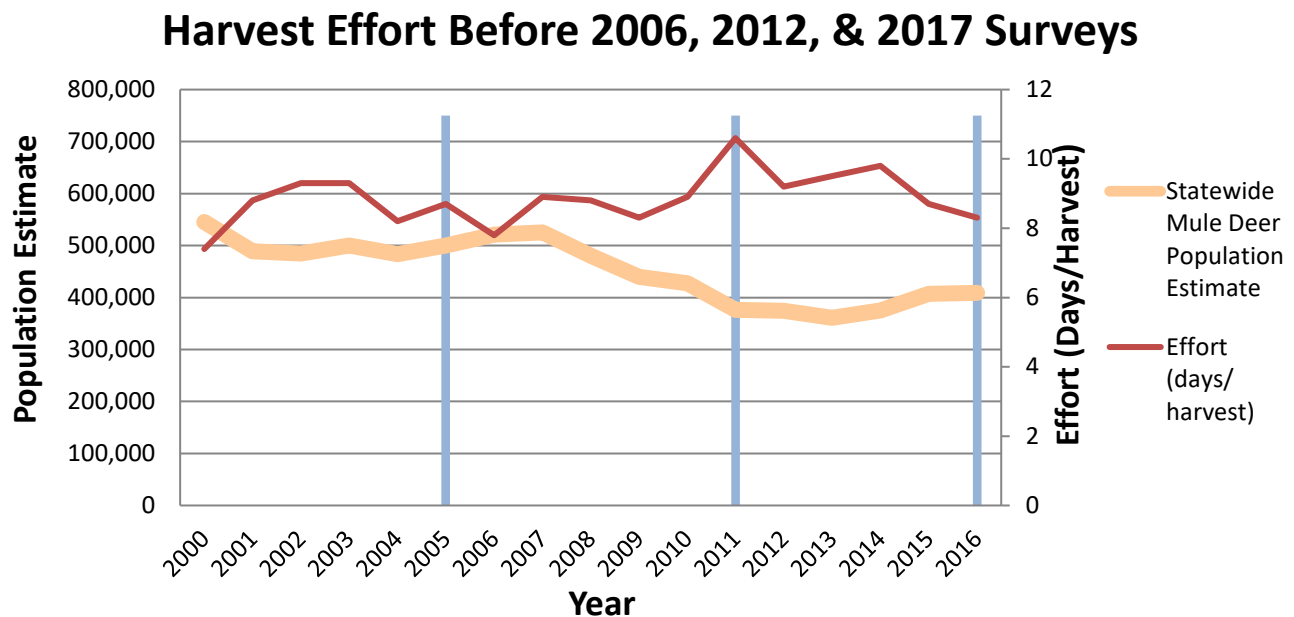


Fig. 2. Mule deer population estimates and harvest effort immediately prior to the 2006, 2012, and 2017 hunter attitude surveys – conditions potentially biasing survey results.

CURRENT DEER MANAGEMENT FRAMEWORK

Overview

As of this report, the WGFD manages mule deer in 37 herd units containing 130 hunt areas. Numerical population or trend count objectives are established for most herds. Sex ratio objectives are based on designated management strategies. Twenty-two herd units are managed under a “recreational management” strategy, with an objective to maintain buck:doe ratios between 20 and 29 bucks per 100 does after the hunting season. Eleven herds units are managed under a “special management” strategy, with an objective to maintain buck:doe ratios between 30 and 45 bucks per 100 does after the hunting season. Four herd units are now managed under a “private land” strategy, indicating the WGFD has very limited ability through hunting seasons to manage the herd toward a population or sex ratio objective. The WGFD applies a range of harvest management options as necessary to increase, decrease or stabilize a population, limit hunter densities, adjust buck:doe ratios, and/or address damage situations.

General versus Limited Quota Licenses

The WGFD uses two basic systems of license issuance, general and limited quota, to manage deer harvest. Resident general deer licenses are unlimited in number and may be exercised in any hunt area in which a general deer hunting season is open. Nonresident general deer licenses are subject to regional quotas and may be exercised in any general license deer season within the region where the license is valid. Resident and non-resident limited quota deer licenses are predominantly valid in a single hunt area (some are valid in multiple areas) and are subject to quotas specifying the number issued each year. Eighty percent of limited quota licenses are allocated to resident hunters and 20% to non-resident hunters. All limited quota licenses and nonresident region general licenses are initially offered through a random computerized drawing. Resident general licenses are available for purchase over the counter.

General license hunting seasons are offered in herds and hunt areas where mule deer harvest can be managed sustainably without the need to limit license availability through quotas. General license seasons provide individuals the opportunity to hunt every year in differing regions of the state and in multiple hunt areas. General licenses are also a fallback option for persons who are unsuccessful drawing a limited quota license. To maintain buck:doe ratios within objective ranges and assure harvest is sustainable, general license seasons may be shorter and are often restricted to antlered mule deer only. Average harvest success tends to be somewhat lower and hunter densities higher in general license hunt areas.

Limited quota seasons afford managers greater control over the number of hunters and sex-specific harvest rates. In cases where demand is high, limited quota licenses may be the most effective option to sustain buck:doe ratios within the objective range, or to meet public expectations regarding hunter densities on accessible lands. Limited quota antlerless or doe/fawn licenses are issued in sufficient numbers to manage populations and address localized depredation concerns. Several hunt areas also have limited quota license seasons valid for doe/fawn white-tailed deer or “any” white-tailed deer.

In 2017, general license hunting seasons were offered in 30 herd units (81% of 37 herd units) and in 100 hunt areas (78% of 130 hunt areas). Strictly limited quota license seasons were offered in 29 hunt areas (22% of 130 hunt areas). One hunt area was closed. Six of 11 herd units designated “special management” were limited quota hunting only and five offered at least some general license hunting seasons for mule deer.

A handful of limited quota license seasons are held later in October or November, giving license holders an opportunity to hunt when mule deer bucks become more active and visible in response to weather, migration or during the rut. License quotas for these late mule deer seasons are typically small due to the increased vulnerability of mature mule deer bucks.

Antlered Only Seasons

The most conservative harvest strategy is a hunting season restricted to “antlered mule deer only.” This type of season can be implemented within either a general or limited quota license framework. An antlered only season enables the mule deer population to increase at its maximum potential rate *provided the herd is below habitat carrying capacity and environmental conditions are favorable*. It is typically applied when a herd is substantially below its population objective, or when the herd cannot be sustained if harvest of either sex is allowed. In other cases, the public will simply not support a limited harvest of female deer even when managers deem it sustainable. In 2017, general license seasons restricted harvest to antlered mule deer only in 77 hunt areas.

Antler Point Restrictions

An even more conservative version of the “antlered mule deer only” strategy is based on antler point restrictions (APRs). In 2017, general license seasons in 27 hunt areas limited mule deer harvest to bucks with at least 3 or 4 points on either antler. This represents a 200% increase over the number of hunt areas with APRs in 2005. In many instances, recent implementation of APRs was (and continues to be) the direct result of public input stemming from regional MDI processes. WGFD previously evaluated effectiveness of APR seasons (Zornes et. al. 2012 – Appendix 2). APRs may temporarily decrease hunter participation and/or increase the number of mule deer bucks in a herd when the buck:doe ratio has fallen below the management objective. The maximum increase in bucks is typically realized when the strategy has been in place 2-3 years, after which hunters are harvesting most of the young bucks as soon as they reach 2-3 years of age and become legal 3 or 4-point deer. At this stage, suspending the strategy for a few years will spread hunting pressure across more age classes, allowing some young 3 or 4-point bucks to survive and grow larger (some hunters will opt to harvest a buck with fewer antler points rather than hold out for a 3 or 4-point deer). The APR can be reinstated when there is need to augment the buck:doe ratio again. However, permanent APR seasons are ineffective because they do not accomplish the desired result (i.e., produce more large deer). All harvest pressure is directed to mature bucks and the number of large-antlered deer in the population is reduced. APR seasons also sacrifice opportunity because the largest harvestable surplus of bucks is in the younger age classes (yearlings, 2 and 3 year olds) and a portion of each age class will die naturally if it is not harvested. Historically, all APR seasons were 4-point or better. However, managers observed an increase in the number of bucks that grow 3-point antlers and believed 4-point seasons might be selecting for this characteristic at a genetic level; or they merely wanted to protect the yearling segment. In response, most 4-point or better seasons have been modified to 3-point or better.

Antlerless and Doe/Fawn Seasons

In order to maintain a deer population within the carrying capacity of the habitat, female deer must be harvested. This is how deer herds are managed – through harvest of does. Herds in which does are never harvested may increase to levels at which they overuse preferred forage plants, resulting in long-term damage to their habitat. At this stage, the condition and health of deer begin to decline. The herd becomes less productive and more susceptible to diseases and large winter die-offs. Once

damaged, habitat can take decades to recover during which deer populations are likely to remain at depressed levels.

Usually, 6-12% of the does must be harvested each year to manage a moderately productive population of deer. If there are 10,000 does in the population, this means 600-1,200 of them must be harvested each year. Various license strategies are used to attain adequate harvests of female deer. In theory, licenses valid for either sex of deer should produce some harvest of female deer. However few hunters will shoot a doe on a license that allows a buck to be harvested. Therefore, comparatively few does are taken during “either sex” seasons. Another strategy allows the hunter to take antlered deer or either sex during the early part of a season, but limits the hunter to antlerless deer during the later portion of the season. This strategy results in some additional harvest of does because unsuccessful buck hunters have the opportunity to shoot a doe for meat after the buck portion of the season has ended. When the objective is to reduce the harvest of does, this strategy can be reversed – hunters are allowed to take either sex at the beginning of the season, and are limited to antlered deer only during the latter part.

To effectively regulate harvest of female deer within most herds, we have found doe/fawn licenses are usually needed. Doe/fawn licenses are almost always limited quota (reduced price) licenses, with the exception of unlimited doe/fawn licenses valid for white-tailed deer in select parts of the state. Doe/fawn licenses may also be issued to alleviate localized depredation problems. In 2017, WGFD issued licenses on which doe or fawn mule deer could be harvested in 44 hunt areas within 23 herd units. Doe/fawn seasons in 33 hunt areas were geographically restricted to target areas experiencing depredation. Currently, a hunter may apply for up to two doe/fawn licenses in the initial drawing. If unissued licenses remain after the initial drawing, a hunter may obtain a total of four doe/fawn licenses including any received in the initial drawing. In certain private land herds with damage issues, there is no limit on the number of white-tailed deer doe/fawn licenses an individual may obtain after the initial drawing, subject to quotas remaining.

Special License Types

The WGFD issues special license types (Type 9, Type 0) that restrict type of weapon (e.g., archery or muzzle-loading only) allowed for hunting some species of big game. However special license types are not currently issued for deer hunting. One hunt area, Chain Lakes (Deer Hunt Area 98), is open to general license holders, but by regulation is traditionally limited to archery or muzzle-loading weapons only. Portions of a few hunt areas are also limited to muzzle-loading rifles or shotguns with rifled slugs for safety reasons. These limitations are stipulated by regulation rather than by license type. A special early archery season is established in most deer hunt areas. Special archery seasons range from 9 to 30 days (most are 30 days) and precede the regular gun season. Anyone holding a deer license valid for the hunt area can purchase an archery license to participate in the special archery season. Persons who hunt during a deer special archery season may also hunt with a firearm during the regular gun season.

White-tailed Deer Management

The WGFD uses the same hunt areas to manage both white-tailed deer and mule deer harvests statewide. However, white-tailed deer herd units are much larger aggregations of hunt areas. Five white-tailed deer herds consisting of 86 hunt areas have been delineated east of the Continental Divide. Four of the white-tailed deer herds are managed under a “recreational” strategy with an objective to maintain between 20 and 29 bucks per 100 does classified after the hunting season (alternatively 25-44 bucks per 100 does classified before the hunting season). One herd is now

managed under a “private land” strategy, indicating the WGFD has limited capability through hunting seasons, to manage the population at a numerical objective. There are no “special management” white-tailed deer herds. In 2017, general license hunting seasons were offered in all five white-tailed deer herd units and in 65 (76%) of the 86 hunt areas. Limited quota license seasons allowing harvest of antlered or any white-tailed deer were offered in 20 hunt areas.

Smaller numbers of white-tailed deer are harvested west of the Continental Divide. No white-tailed deer herd units or population objectives are identified in that part of the state. Most deer seasons in western Wyoming do not distinguish the species that may be taken. A few seasons and license types specifically target white-tailed deer in hunt areas where their numbers have grown.

Managing sympatric white-tailed deer and mule deer populations poses several unique challenges. Although both species are hunted in the same hunt areas and commonly on the same license types, white-tailed deer tend to be more prolific, resilient to harvest pressure, and often involved in crop and forage depredation on private land. In addition, we see an inherent bias toward harvesting antlered mule deer in areas where a license type allows harvest of either species. In light of these challenges, the WGFD has developed several strategies to manage white-tailed deer populations and address depredation concerns. Much of the doe/fawn deer harvest throughout the state is directed at white-tailed deer. Limitations for general and limited quota Type 1 licenses often allow harvest of any white-tailed deer in areas where mule deer must be antlered to be legally harvested. Later seasons in which only white-tailed deer may be taken are also offered in several hunt areas and provide opportunities to hunt during the rut. Limited quota Type 3 licenses valid for any white-tailed deer only were offered in 33 hunt areas in 2017. Limited quota Type 8 licenses valid for doe/fawn white-tailed deer only were offered in 40 hunt areas. Regulatory provisions allow a person to obtain up to two full-price deer licenses provided at least one is a Type 3 “any white-tailed deer” license and at least one license is obtained after the initial drawing. There is no limit on the number of white-tailed doe/fawn deer licenses an individual hunter may obtain after the initial drawing in several northeast Wyoming hunt areas, subject to quotas remaining. Nearly all doe/fawn licenses available in those hunt areas are limited quota Type 8 valid for doe/fawn white-tailed deer only. Season dates for limited quota Type 3 and 8 licenses tend to be very liberal with ending dates in late November or December.

The more liberal seasons and limitations, along with species-specific license types, are the WGFD’s principal strategies to achieve adequate harvests of white-tailed deer in a system where both species of deer can be hunted in common hunt areas.

Separation of Mule Deer and White-tailed Deer Licensing

WGFD has analyzed potential to create separate mule deer and white-tailed deer licensing systems (WGFD 1987; WGFD 2007 – Appendix 3). These analyses were conducted in response to requests from the public and attempted (but failed) legislation. Separate licensing systems would make all deer licenses species-specific. For the most part, rationale for segregating licenses has focused on providing maximum opportunity for white-tailed deer hunting while maintaining conservative management of mule deer. Alternatives could allow hunters to possess both a full-price mule deer license and a full-price white-tailed deer license in the same year, or to possess only one or the other. Depending on the scenario, hunter crowding could be reduced or increased.

Both prior analyses recommended against separating deer license issuance based on species. This would require a legislative revision of W.S. § 23-2-101 to provide separate license fee structures for

white-tailed deer and mule deer licenses. Moreover, the WGFD already uses various strategies where needed to manage mule deer and white-tailed deer harvests independently. In several hunt areas, timing limitations are used to make licenses valid for both species or just one or the other species during differing segments of the season. Licenses restricted to antlered mule deer often allow harvest of any white-tailed deer. Limited quota Type 3 licenses are valid for any white-tailed deer and can be purchased in addition to any full-price general or limited quota deer license. Limited quota Type 8 licenses valid for doe/fawn white-tailed deer can also be purchased as additional licenses. These license and season strategies are sufficient to provide additional white-tailed deer opportunity while maintaining conservative mule deer seasons.

VALUE OF CURRENT DEER MANAGEMENT FRAMEWORK

No single management approach will adequately respond to the diverse biological conditions and social preferences throughout Wyoming. Our existing framework affords flexibility to adjust for such considerations as hunting access, damage issues, weather patterns, migratory and non-migratory behavior, winter losses, disease, and geographically differing seasonal chronology. The current framework emphasizes opportunity by providing the ability to hunt on a general license each year, while also providing an array of limited quota hunting opportunities. Based on attitude surveys, a majority of resident hunters support the WGFD's current deer management. Any broad shift toward an increasingly conservative paradigm will risk drawing substantial public opposition.

Although responses to some survey questions suggest hunter crowding may be a factor influencing perceptions of mule deer hunt quality, it is worth noting the number of mule deer hunters in the field has declined as much as 64% since the early 1980s (Fig. 3). The overall trend has been consistently decreasing, but may be stabilizing in recent years. The number of white-tailed deer hunters has been stable to slightly increasing, though remains substantially lower than the number of mule deer hunters. Perceptions of hunter crowding possibly stem from increasingly restricted access to private lands, potentially displacing a larger proportion of the remaining mule deer hunters onto accessible public lands. Hunters also become less tolerant of other hunters when deer numbers are lower, as evidenced in responses to the 2012 attitude survey.

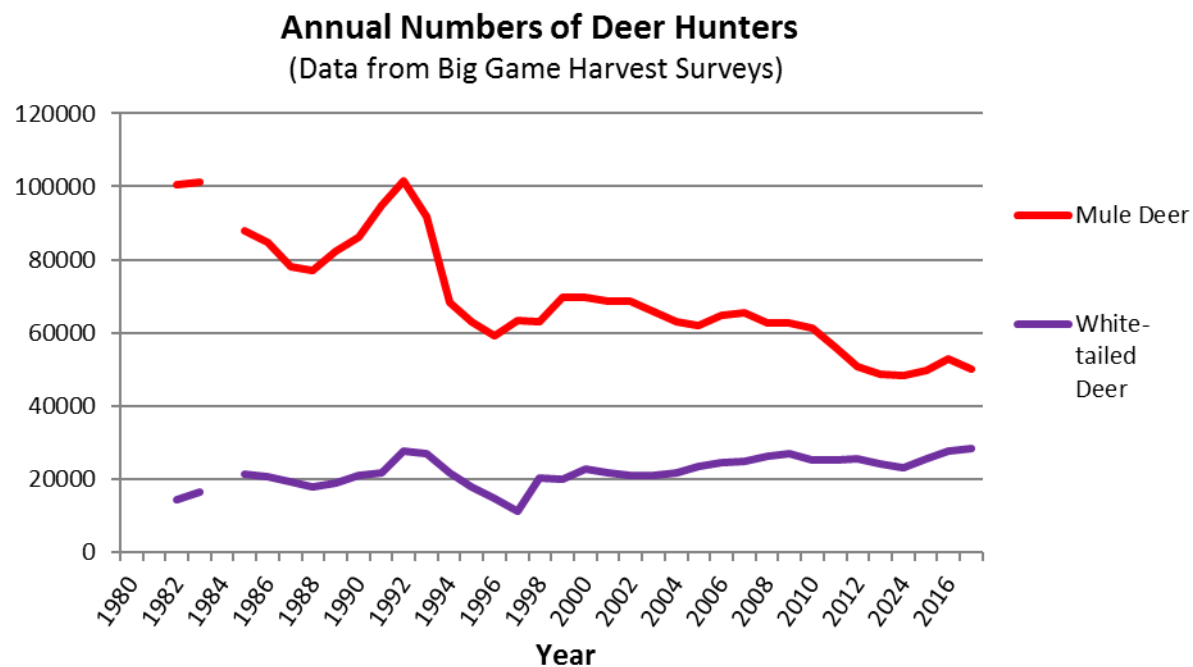


Fig. 3. Comparison of the number of mule deer and white-tailed deer hunters since 1980.

EXISTING OPTIONS TO ADDRESS HUNT QUALITY WITHIN A GENERAL LICENSE SEASON FRAMEWORK

Several strategies can be implemented within WGFD's existing management framework to address contemporary challenges and concerns about deer numbers and hunt quality in general license hunt areas. Should WGFD be compelled to take further actions addressing such concerns, the MDWG and RRC recommend first considering one or some of the management strategies the current system can accommodate, as outlined below:

Open hunting seasons on weekdays

- Advantages
 - Could reduce crowding by reducing the number of hunters in the field on opening day.
 - Only requires changes at the local level during season setting.
 - Could reduce harvest pressure and better protect mule deer bucks.
- Disadvantages
 - May have some opposition if it becomes harder to hunt opening day.
 - Perceived as "unfair" by individuals who are unable to take time away from work.
 - Loss of youth opportunity on opening days.
 - Regulation and application packet complexities associated with changes in dates every year.
 - Could reduce mule deer harvest during years when it's needed, although weekend openers can be reinstated when additional harvest is desired.

Reduce nonresident region quotas

- Advantages
 - Reduces the number of deer hunters and the proportion that are nonresidents.
 - Does not impact resident deer hunters' opportunity.
- Disadvantages
 - Significantly impacts license sales revenue.
 - Impacts recreational/tourism income to local communities.
 - Impacts nonresident deer hunting opportunity.
 - Outfitters often strongly oppose.

Shorten general license mule deer season length

- Advantages
 - May reduce mule deer harvest pressure.
 - Hunters still have the opportunity to hunt every year.
- Disadvantages
 - Outfitters often strongly oppose.
 - May reduce youth opportunity.
 - May increase hunter crowding within a condensed timeframe.
 - Constrains flexibility to schedule and plan hunting trips.
 - Hunters may still hunt the same number of days on average unless season length is shorter than average days hunted.
 - May increase mule deer harvest due to deer movement caused by increased hunter crowding.

Antler point restrictions

- Advantages
 - Temporarily increases the number of bucks in the population by protecting yearlings and some younger mature.
 - Increases the number of small mature bucks and potential of harvesting one.
 - Strategy can increase the number of large bucks in the population if APRs are suspended periodically and harvest is redistributed over all age classes.
 - Reduces buck harvest pressure in areas where APRs reduce hunter numbers (APRs do not always reduce hunter participation).
- Disadvantages
 - Reinforces a public misperception regarding the strategy's effectiveness.
 - Reduces the number of large bucks in the population by focusing all harvest on larger bucks, especially when the public resists suspending antler point restriction once it has achieved its purpose after 2-3 years.
 - May reduce hunter participation because some hunters avoid areas with additional restrictions that reduce overall success rates.
 - Increases the number of violations by hunters who mistakenly harvest bucks that do not meet the antler point restriction and may increase the number of deer abandoned in the field.
 - Reduces recreation opportunity because the largest harvestable surplus is sustained by younger age-class bucks.
 - Puts more harvest pressure on the population segment that is genetically capable of growing larger antlers: (bucks that reach the minimum number of points at a younger age, such as 3 point yearling bucks)

Minimize overlap of deer & elk seasons (also doe/fawn seasons)

- Advantages
 - Reduces crowding by separating hunters in time.
 - May reduce crowding by eliminating combination hunts that used to attract more hunters to certain areas.
 - Compatible with our current regulatory structure, already practiced in many hunt areas.
 - Reduces potential to overharvest one or the other species (usually deer) in some areas due to increased hunter participation.
- Disadvantages
 - Eliminates the option of combination hunts, which are popular in some areas – a majority of respondents to the 2006 Hunter Attitude Survey (60%) also favored overlapping general deer and elk seasons..
 - May adversely affect management when a longer, potentially overlapping season is needed to achieve herd objectives, although this can be reinstated as needed.
 - May require that one species or the other is hunted at a less optimal time.
 - In many areas, the same hunters who hunt deer also hunt elk, so eliminating overlapping seasons may have limited effect on hunter densities. The practice is already being implemented in many places where it has potential to be effective. The potential to overharvest deer during an open elk season is often the reason for non-overlapping seasons, rather than hunter crowding concerns.

- If deer seasons occur earlier than elk seasons, deer hunters could displace elk from public land in some areas prior to start of elk season.
- Non-overlapping doe/fawn seasons may reduce participation where doe/fawn harvest is needed

Create new nonresident region(s)

- Advantages
 - Could redistribute nonresident deer hunters from crowded hunt areas to less crowded hunt areas depending upon established license quotas.
 - Reduces the number of deer hunt areas nonresidents can hunt in any one year.
 - Does not impact resident deer hunting opportunity.
- Disadvantages
 - Reduces flexibility for nonresident deer hunters to hunt several areas on the same license.
 - May reduce income if some nonresident deer regions become less popular and undersubscribed.
 - Increases complexity of regulations. Several additional nonresident deer regions have already been created.
 - May not make a difference in some regions that currently have relatively low numbers of nonresident deer hunter numbers.

Convert selected general license hunt areas to limited quota license hunt areas

- Advantages
 - Regulate/reduce deer hunter densities.
 - Longer deer seasons.
 - Higher overall harvest success.
 - Tighter control over realized harvest.
 - Better sample frame for harvest survey, more dependable results.
 - Easier to sustain herd at trophy (special management) objectives.
 - Can achieve some objectives (e.g., buck:doe ratios, landowner satisfaction) that are not as easily attainable under general license frameworks.
- Disadvantages
 - Reduces recreational opportunity, high demand for available licenses.
 - Displaces hunters to other general areas, which increases crowding in those areas and may eventually necessitate limited quota hunt areas statewide (“cascade effect”).
 - May substantially reduce funding used to support wildlife management.
 - Hunters’ lose flexibility to hunt in several hunt areas over a longer period of time.
 - May adversely affect deer hunters’ interest (we lose hunters) by forcing everyone to apply early in the year and select a single hunt area. Hunters may not be interested in buying a license in an undersubscribed hunt area later in the year. Lots of general licenses are bought in fall, just prior to or during the deer season. The vast majority of resident licenses sold are general deer licenses.
 - Lose recruitment of youth hunters who may be unable to draw a license near their home or when they are first eligible.
 - Creates expectation for conservative management, resulting in public input favoring overly conservative license quotas, which can impede management toward herd objectives.

- Outfitters may oppose loss of nonresident deer region general licenses.
- In some instances, nonresident deer hunter opportunity can increase (some general areas currently have <20% nonresident hunter participation), which can be perceived positively or negatively.
- Limited quota deer licensing will not resolve the biological issues that limit the mule deer population from increasing, but once implemented, it's hard to return to general license seasons.
- Creates a substantial burden to administer landowner licenses across the state. In addition, statewide limited quota licenses will significantly increase demand for landowner licenses thereby further restricting public hunting opportunity.
- Creates false expectations that mule deer populations will increase as a direct result.

ALTERNATIVE STRATEGIES TO IMPROVE HUNTING QUALITY IN GENERAL LICENSE HUNT AREAS

Although Wyoming's current mule deer management framework is broadly supported, both within the WGFD and by the public, we continue to receive input advocating further restrictions placed on deer hunting seasons to address hunt quality issues. The remainder of this document explores a range of alternative management strategies intended to address the prevalent concerns within hunt areas currently open to general license deer hunting. In most cases, the strategies will have negative outcomes that need to be considered as well. The intended positive aspects of each strategy are described along with expected consequences. The strategies are ranked in the order the MDWG and RRC recommend their implementation be considered if the need arises. This ranking will provide some guidance to local managers considering a progression toward increasingly conservative hunting seasons. Strategies may be implemented at the individual hunt area or statewide level.

Further standardization of season opening dates on a statewide or regional basis

Standardization of season dates provides a means to maintain general license hunting opportunity while reducing hunter densities in a given area. When hunting seasons have differing opening and closing dates, hunters have the opportunity to move between hunt areas and potentially hunt multiple opening dates. This can increase hunter densities in some areas. Conversely, overlapping or concurrent season dates limit hunters' ability to move between hunt areas. The more hunting season dates, especially opening dates, are standardized, the less opportunity hunters will have to hunt multiple areas on a general license in a given year. However, while hunter densities may decrease in many hunt areas, densities may increase in others depending on the areas hunters select. Currently, all but one general license hunting season (allowing the take of antlered mule deer) open on one of the following four dates: Sept. 15, Oct 1, Oct. 15 or Nov. 1. To place further temporal constraint on hunters, seasons could be limited to only two or three opening dates. In concert with this option, managers should also consider standardizing closing dates to the extent possible, as regional differences would allow hunters to more readily hunt multiple areas during the middle or latter part of the season.

- Advantages
 - Could reduce crowding by compelling hunters to select one hunt area to hunt on opening day within a given region of the state.
 - Compatible with our current regulatory authority, already practiced in large areas of the state.
 - Only requires changes at the local level (season setting) without sweeping statewide changes to hunting season structure.
 - Reduces complexity of regulations.
 - Three or four opening dates with each instituted on a regional basis would still enable those willing to travel longer distances the option of hunting on multiple opening dates.
 - Standardized opening dates are a strategy that can maintain the general license structure, thereby preserving flexibility for hunters to select from among multiple hunt areas.
 - May reduce the perception of hunter crowding by making it harder for hunters to hunt multiple opening dates within a given region.
 - A segment of the resident hunting community that continuously lobbies for more restrictive seasons may support this proposal.

- Disadvantages
 - Hunters who prefer the option to hunt several opening dates will find it harder to do so.
 - May not accommodate local/regional differences in chronology related to migrations, weather, or access.
 - Will result in reduced hunting opportunity in some areas where seasons must be shortened to accommodate standardized opening dates, unless seasons can be lengthened on the back end.
 - This may have limited effectiveness given hunters would still be able to hunt multiple hunt areas with different opening dates, although such opportunities would likely be interregional in nature.

General and limited quota licenses within the same hunt area

General and limited quota seasons can be structured to manage mule deer harvest and provide high demand opportunity within the same hunt area. For example, general deer season opening dates of Nov. 1 or Oct. 15 can be changed to Oct. 1 to reduce harvest pressure on bucks and potentially increase the number of mature bucks in the herd. A popular “late” season can then be offered by issuing a limited number of limited quota Type 1 licenses valid in later October or November, after the early general season has ended. This approach allows maximum hunter participation during the early season when mule deer bucks are typically dispersed over a large area and less vulnerable to harvest, but also offers a small quota of licenses valid during a late season after bucks are concentrated on or near winter ranges. During 2008, hunting seasons in the Clarks Fork Mule Deer Herd were changed from Oct. 15 – Nov. 10 to Oct. 1 – 31. In subsequent years, the mule deer buck harvest decreased by ~130 per year, while the average ratio of mature mule deer bucks to does increased by about 7:100 (from 11:100 in 2003-2007 to 18:100 in 2008-2012).

- Advantages
 - Mule deer buck harvest is lowered by advancing the general season dates before the rut begins.
 - Opportunity for maximum hunting participation is provided early, with limited but high quality opportunity late.
 - Late season hunts are popular since hunters have a good chance to see and harvest mature bucks.
 - There are no landowner licenses to administer if a general license season is retained.
 - The earlier general season may disperse hunters since deer are distributed over a large area.
 - Late limited quota harvest “showcases” the quality of bucks potentially available during the early season.
- Disadvantages
 - Early general seasons can have lower hunter success and higher public dissatisfaction for a few years after the change is implemented.
 - It can be unpopular with the public when Commissioner and Governor’s license holders are allowed to hunt during the limited quota license late season.
 - The dual season structure complicates the regulations somewhat.

Split general seasons

Several variations of this management strategy are potentially available. The typical framework would consist of one subset of licenses (e.g. Type A) valid only for the first half or portion of the

season, and then a second subset of licenses (e.g. Type B) valid only for the second half or portion. This concept could be applied on an individual hunt area basis or across all general hunt areas statewide.

- Advantages
 - Could reduce crowding by dividing hunters into two groups hunting at different times.
 - Season length could be maintained or extended in some areas under a split limited quota scenario.
 - Accommodates the prevalent desire to hunt every year.
 - Might pull some existing limited quota license hunt areas back into a general license season framework.
 - A split season strategy is consistent with survey data suggesting the majority (86% in 2017) of hunters would be willing to delay their hunt until later in the season if it results in seeing fewer hunters.
- Disadvantages
 - Season segment lengths may be shorter thereby reducing hunting opportunity under a split general license scenario.
 - Increases regulation complexity.
 - Increases complexity of the harvest survey.
 - Could increase hunter crowding in some areas if both license types are valid for the entire season in some hunt areas and not in others. For example, Type B hunters might hunt opening day in a general license hunt area where both types are valid all season long.

Establish resident deer regions

Refer to the Resident Region Committee report (*General License Deer Regions – December 1, 2017*).

Separate mule deer and white-tailed deer licenses

- Advantages
 - This constitutes a simplification of regulations as licensing and regulations would be species-specific.
 - Can charge a separate license fee structure for the two species, thereby enhancing the value of mule deer licenses.
 - Would simplify the harvest survey.
 - May provide a way to further liberalize white-tailed deer hunting opportunity without impacting conservative mule deer seasons.
 - May increase license sales and hunting opportunity if hunters are allowed to more easily possess two full-priced deer licenses throughout the state.
 - Gives the WGFD greater control over harvest of each species, therefore the ability to manage them separately.
- Disadvantages
 - Could significantly impact white-tailed deer harvest in the Black Hills given many (if not most) nonresidents intend to harvest mule deer when they obtain a Region A general license, but then harvest white-tailed deer which are more abundant on public land. If separate licenses are issued, it is possible the licenses valid for white-tailed deer only could be undersubscribed.

- Nonresident Region A hunters typically account for ~75% of the antlerless white-tailed deer harvest as they more readily secure permission on private lands.
- Would decrease flexibility for general license holders to opportunistically harvest either species on the same license.
- Would significantly impact drawing odds for current limited quota (Type 3/8) white-tailed deer licenses, as hunters could apply separately for each species.

Restrict licenses & seasons to single weapon type

- Advantages
 - Could reduce crowding by forcing hunters who currently hunt in both the special archery and regular seasons to select one or the other.
 - Does not reduce the opportunity to hunt in terms of drawing a license.
 - Lower participation during special archery season could reduce pressure on buck mule deer, thereby increasing opening day success during the regular season (although participation during the existing special archery deer seasons is considerably lower than during special archery elk seasons).
 - Because archery hunters are less successful, WGFD may be able to issue more archery licenses (Type 9) within limited quota hunt areas, possibly increasing overall opportunity to hunt.
- Disadvantages
 - This strategy has not effectively decreased deer hunter densities in other states.
 - Eliminates the option of hunting in both archery and regular seasons, thereby reducing opportunity for the individual license holder.
 - May not reduce crowding much because archers constitute a small percent of the total population of deer hunters. Forced to choose, the considerable majority will likely hunt during the regular season.
 - Increases regulation complexity.
 - Would complicate nonresident region general licenses – may have to choose weapon type, or would have separate nonresident regional quotas for each weapon type.
 - Implementing “choose your weapon” seasons for any big game may be unpopular with resident hunters.

Prohibit use of ORVs (or other vehicles) off established roads for taking wildlife on public lands

- Advantages
 - Addresses one of the most common complaints we hear from the public.
 - May discourage illegal off-road travel thereby increasing deer escapement.
 - May reduce perceptions of hunter crowding in more remote areas.
 - Eliminates a significant cause of resource damage.
 - Restores a higher ethical standard to hunting.
 - Addresses significant public concern regarding ORV abuse (issue was brought up repeatedly during local MDI meetings).
 - Reinforces existing prohibitions against off road travel on many federal lands. Enables WGFD resources to assist with enforcement.

- Disadvantages
 - Will meet strong resistance from some hunters and the ORV industry.
 - Regulatory provisions & exceptions may be complex.
 - Very difficult and time consuming to enforce given widespread and prolific misuse of ORVs across the state. (Of course, this speaks to the need for greater enforcement).
 - Could be perceived as favoritism toward horseback hunters and outfitters in western Wyoming.
 - Elderly and/or disabled hunters may accuse the WGFD of limiting their mobility to hunt depending upon how ORVs would be restricted.

Convert all general hunt areas to limited quota licenses

- Advantages
 - Regulate/reduce hunter densities.
 - Potentially longer seasons.
 - Higher overall success compared to current general license hunt areas (dependent upon management goals within a given hunt area / herd unit).
 - Tighter control over actual harvest.
 - Better sample frame for harvest survey leading to more precise results.
 - Can more readily achieve management objectives (buck:doe ratios, etc.) that are not easily attainable under general license frameworks.
 - Statewide limited quota licenses may ultimately lead to a resident preference point system for deer (could be viewed as an advantage or disadvantage).
 - Outfitters may support this in areas where the 80/20 split of resident versus nonresident deer licenses would result in an increase of nonresident hunters. This could occur in hunt areas where nonresident region general deer hunters constitute less than 20% of overall deer hunter numbers in general license hunt areas.
 - Could increase income for wildlife management if nonresident license quotas increase overall.
- Disadvantages
 - Reduces recreational opportunity.
 - Creates false expectations that mule deer populations will increase as a direct result.
 - Hunters will likely not get to hunt mule deer every year in their preferred area.
 - Some or many deer hunters may not get to hunt every year, which may impact hunter recruitment and retention.
 - May reduce recruitment of youth hunters who may be unable to draw a deer license when they are eligible.
 - Hunters lose flexibility to hunt in several hunt areas over a longer period of time.
 - Public input for setting limited quota license seasons often favors overly conservative license quotas, typically to improve mule deer hunting and/or buck quality, which can unnecessarily reduce hunting opportunity.
 - May substantially reduce income for wildlife management if license quotas become increasingly conservative.
 - Outfitters may oppose loss of nonresident region general deer licenses as there would be an 80/20 resident/non-resident split statewide, thus making it more difficult for their clients to draw licenses in some hunt areas.

- Residents may oppose this in hunt areas where the 80/20 split of resident versus nonresident licenses would result in an increase from current levels of nonresident hunters. This could occur in hunt areas where nonresident region general deer hunters constitute less than 20% of overall deer hunter numbers in general license hunt areas.
- Creates a substantial burden to administer landowner licenses across the state. In addition, statewide limited quota licenses will significantly increase the demand for landowner licenses, thereby further restricting public hunting opportunity.
- Statewide limited quota licenses may ultimately lead to implementation of a resident preference point system for deer (could be viewed as an advantage or disadvantage).

Statewide limited quota licenses with general youth licenses

- Advantages
 - Maintains youth hunting opportunity if increasingly restrictive limited quota license mule deer management moves forward.
 - Other advantages are same as those listed under statewide limited quota licenses.
- Disadvantages
 - Some hunters may be concerned about extra hunting pressure on mule deer or overall fairness.
 - This is effectively statewide limited quota licensing given the relatively small percentage of youth hunters across the state. It also ignores other special sex/age groups such as pioneer hunters, women, disabled hunters, veterans, etc.
 - Other disadvantages are same as those listed under statewide limited quota licenses.

RECOMMENDATIONS

The WGFD effectively employs several license and hunting season strategies to address the various challenges associated with mule deer management and hunting across Wyoming. ***The preferred course of action as a result of this analysis is to retain the existing deer management and hunting season framework.*** This framework provides a range of general and limited quota hunt areas and hunting opportunities throughout the State.

The analysis in this report does not support a compelling justification or need to deviate from the WGFD's existing management framework. Our current hunting season and license structure provide an appropriate suite of tools deer managers can tailor to address diverse and changing social preferences and local conditions. Based on recent attitude surveys, a majority of hunters support the WGFD's deer management program, which has realized a high degree of hunter satisfaction and enabled the MDI efforts to be successful. It has also enabled managers to maintain general license hunting opportunity throughout the state. Further restrictions, even on a localized scale, portend a step-wise progression trending toward increasingly restrictive hunting seasons and associated loss of opportunity.

Nine strategies have been identified as possible alternatives to modify or replace the existing deer season and license structures in Wyoming. Through a consensus process, the nine strategies were ranked in terms of their potential effectiveness and likely acceptance based on our assessment of hunter attitudes and preferences. Advantages and disadvantages of each strategy are also summarized. The three top ranked strategies are best suited to accommodate hunter preferences if a change from the existing season structure is given further consideration. These would be the first alternatives managers should consider as potential courses of action. The three strategies were selected primarily because they allow general license hunting for mule deer to continue at some level. The listing order of the top three strategies should not be construed as a priority ranking – each should receive equal consideration. These three alternative strategies are:

- 1. Further standardize season opening dates on a statewide or regional basis**

General deer seasons currently open on four primary dates across the state. Further reducing the number of opening dates would most likely redistribute hunters and improve hunt quality by reducing hunter crowding, especially at the beginning of the season.

- 2. Set general license and limited quota license seasons within the same hunt area**

This strategy is currently employed in several hunt areas and could be applied to additional areas. For example, some hunt areas in western Wyoming could conceivably have early limited quota license high country hunts and a later general license season that ends prior to the rut. Alternatively, a later limited quota license season could be set to coincide with the rut or migration period after the general license season has ended.

3. Split general license seasons

The split general season license strategy redistributes general license hunters temporally by designating two or more general license types that are valid during differing periods within the same hunt area. The strategy has several potential variations, and could also be employed in combination with a partial limited quota license strategy.

By continuing a significant availability of general license deer hunting seasons in our statewide management profile, we can preserve the high level of hunting opportunity currently enjoyed in Wyoming. It is also important to note each of the alternative strategies identified to address hunting quality concerns will result in some reduction in mule deer hunting opportunity. Managers must consider the effect instituting a new strategy may have, not only in their respective hunt areas, but also on a statewide scale. Ultimately, the success of any change to the current management framework will hinge upon the ability of WGFD to engage and involve the public.

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APPENDIX 1. MEMORANDUM: GUIDANCE PROVIDED TO THE COMMITTEE BY WILDLIFE DIVISION CHIEF

July 24, 2017

MEMORANDUM

TO: Todd Graham, Regional Wildlife Supervisor and Justin Binfet, Wildlife Management Coordinator

FROM: Brian R. Nesvik, Chief, Wildlife Division

COPIES: James Hobbs, Travis Crane, John Davis, Biff Burton, Brady Frude, Dean Clause, Ian Tator, Doug Brimeyer, Scott Edberg, Bea Nicolas, File

SUBJECT: Mule Deer Committee Assignment

During the May wildlife management meeting in Casper, we discussed the 2017 season setting process, future mule deer management, public attitude surveys and the creation of an internal committee to help evaluate mule deer management. We recently finalized the framework for a resident mule deer hunter survey and are working with Responsive Management to conduct this survey. The results should be available early this fall. Another other action item from this meeting was having a group of managers evaluate current deer management and review the draft resident region proposal developed by the Mule Deer Working Group in 2014. I ask the two of you to share the leadership responsibilities for this effort by co-chairing the committee.

I ask for two deliverables from your group. First, by December 1, 2017 please have your committee review the 2014 report, review the historical hunter and harvest information and evaluate options for future deer management from a statewide perspective. I also ask that you include information from other states in your analysis. Your evaluation should include a detailed analysis of the effects and outcomes that may come from a resident region season structure. Also determine the effects and outcomes possible on both the wildlife and the public satisfaction if resident deer regions are put in effect. In 2012, approximately 64% of residents supported resident regions following the harsh winters in 2010-2012 and the results of the 2017 survey should be available for your review and comparison.

The committee should also look at other options to address population and hunter management including the comparison of general and limited quota season structures, the value and efficacy of antler point restrictions, white-tailed vs. mule deer management (separated or status quo) and any other options the group may come up with. By February 15, 2018, I ask that you provide at least two, but no more than 5, courses of action for consideration by other wildlife managers across the state. Those courses of action should include your analysis and a recommendation for your group's preferred option and why. All options identified by the group should address the pros and cons of each.

I am including the notes from our May Meeting and the Resident Region concept paper from 2014 for your review. Overall, we would like your group to provide a report that can be used to make informed decisions regarding hunter opportunity and population management.

APPENDIX 2. 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 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 re-directed 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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APPENDIX 3. HUNTING MULE DEER AND WHITE-TAILED DEER WITH SPECIES SPECIFIC LICENSES: AN ANALYSIS AND RECOMMENDATIONS

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Introduction

Sympatric populations of mule deer (*Odocoileus hemionus*) and white-tailed deer (*Odocoileus virginianus*) occupy most major drainage systems in the mid to low elevations of Wyoming. Over the past half-century, significant populations of white-tailed deer have become established in many locations formerly dominated by mule deer. The notable exception being in the Black Hills of Wyoming where white-tailed deer are the dominant species (Lanka 1989).

Historically, a single “deer license” has been issued to hunt mule deer and white-tailed deer. Although, since at least 1975, the concept of offering separate, species-specific licenses has been periodically examined (Nemick 1975). In the late 1980’s this issue was reviewed in detail (Cleveland et al. 1987; Lanka et al. 1989). At that time, the recommendation was made to hunt the species together or separately, using the existing regulatory framework. That system has continued to the present. Depending on management needs, both species are hunted on a single license, or with species restrictions applied to general or limited quota license hunting. However, the question continues to be raised both within the Department and by some members of the public: Are there needs or benefits to managing Wyoming’s deer species under separate licenses? This paper reexamines the issue by evaluating prior analyses in light of current conditions in the state. We also recommend a license framework designed to maximize hunter opportunity, allow adequate management of deer populations, and increase Department revenue, while responding to concerns of the Department’s big game managers.

Decision Alternatives

There seem to be three viable alternatives, with various iterations of complexity, to managing Wyoming’s two deer species separately (Cleveland et al. 1987):

Species-specific licenses created by legislation, with license issuance and restrictions regulated by the Commission.

Species-specific license types, issuance, and restrictions regulated by the Commission alone.

Hunting both species together, or separate, under the existing statutes and regulatory framework set by the Commission. *Current situation*

History / Prior Analyses

Cleveland et al. (1987) considered the three alternatives described above and recommended exploring options available under Alternative 3. They encouraged the Department to “*implement them when possible to better manage the resource, provide increased revenue to the Department, and provide*

increased recreational opportunity to the public,” and suggested once such a system was fully implemented “the Department could explore Alternatives 1 and 2 if deemed necessary.” However, they concluded implementing either would “invite unwarranted opposition.”

The recommendation of Cleveland et al. (1987) was based upon a two tier, cost/benefit analysis. The first tier weighed the pros and cons of managing white-tailed deer and mule deer separately in light of the Department’s “*Strategic Plan for the Comprehensive Management of Wildlife in Wyoming 1984-1989.*” As would be expected, the authors identified both positive and negative aspects to managing the two deer species separately.

The second tier evaluated costs and benefits of species-specific management under the three alternatives. In the end, Cleveland et al. (1987) recommended the Department pursue Alternative 3. Most of their recommendations have since been implemented. However, they did offer several additional observations and thoughts:

“There appears to be no doubt that opportunity exists for managers to allow the hunting of white-tailed deer and mule deer through the issuance of separate licenses. Such a proposal, if implemented, could (1) increase the management data for both species, (2) increase Department revenues, and (3) provide for an increase in recreational opportunity to the public.

Such a proposal is not without its pitfalls and managers should move slowly and methodically in implementation of such a system. At the very least, the proposal could (1) receive no support from the legislature if legislative action is deemed necessary, (2) not be well accepted by Department personnel and the public and, (3) be met with resistance from the private land community which provides habitat for the majority of the white-tailed deer in the state.

Having listed and briefly discussed the options for implementation of a system to hunt white-tailed deer and mule deer separately, it is our recommendation that Alternative 3 be adopted. This alternative allows the continuation of hunting both species together or individually under existing regulations. It allows the ultimate flexibility to the manager in each hunt area. It also allows the Department and the public a period of time to adjust to hunting each species separately. Individual managers would determine the rapidity in which the system is implemented in areas inhabited by both species. With this flexibility, the possibility of implementing the system on a broad scale over a period of time is far better than attempting to implement a change of this magnitude on a large scale in a short period of time.”

After the report of Cleveland et al. (1987), the Department began on a limited basis to restrict harvest according to species (usually within a specified time frame) in some general license hunt areas. The Department also started issuing limited quota licenses restricted to white-tailed deer only. This framework has expanded in complexity and in the number of hunt areas covered, and continues today.

A similar analysis was applied specifically to the Black Hills (Lanka et al. 1989) where 75% of the state’s white-tailed deer are found. The impetus for this analysis was the assumption legislative action might be pursued in 1991 to the separate deer licenses by species. Thus, the Department believed it prudent to find the best way of implementing such a system.

Lanka et al. (1989) provided additional detail regarding the advantages and disadvantages of separating license issuance by species. They identified and evaluated six license issuance and season structure alternatives. Further, they examined differing desires and expectations of resident and nonresident deer hunters. Based on experiences of surrounding states, Lanka et al. (1989) also provided an estimate of illegal take likely under a species-specific licensing scenario. The authors concluded there was “no

sound biological or management need to split licenses. The disadvantages (of doing so)... far outweigh the advantages.”

Current Situation

The Department has identified 39 mule deer and 5 white-tailed deer herd units in Wyoming (WGFD 2006). Both deer species occupy suitable habitat in variable densities statewide, with white-tailed deer having expanded their distribution since about 1970. Outside the Black Hills, significant populations of white-tailed deer are found along the east front of the Big Horn Mountains, in the Big Horn Basin, along the North Platte River, and in southeast Wyoming. Department harvest records indicate the numbers of white-tailed deer harvested outside core white-tailed deer areas have increased annually. In 1971 white-tailed deer harvest was reported in 7% of 153 deer hunt areas, whereas in 2005, 74% of 152 deer hunt areas reported white-tailed deer harvest. The most recent harvest survey reveals about 43% of the white-tailed deer harvested came from the Black Hills, 35% from the Powder River Herd, 9% from the Big Horn Basin, 10% from central and southeast Wyoming, and the remaining 4% scattered around the rest of the state. In contrast, the 1971 harvest of white-tailed deer came almost entirely from the Black Hills and Sheridan area.

Local managers believe the number of white-tailed deer has been stable or increased in many hunt areas, while mule deer numbers declined over the past two decades. These trends have been documented in various Job Competitions Reports and statewide harvest reports. They are also reflected in the increased number of antlerless licenses issued for white-tailed deer only. In recent years, deer license issuance and season structures have been generally designed to restrict mule deer harvest while increasing opportunity to hunt white-tailed deer. Based on historical harvest data, these strategies have worked on a statewide basis.

Current statutes, Commission regulations, and hunting license issuance allow for a wide array of deer hunting season structures. A multitude of license types and season frameworks differentially affecting harvest of mule deer and white-tailed deer are present throughout the state. Depending on the hunt area, these strategies operate alone or in combination. Many hunt areas host multiple seasons with a variety of license types valid, some in combination with other season structures, hunt areas, or special restrictions affecting portions of an area. In addition, season dates and lengths often vary between hunt areas. The basic deer season structures and the frequency they were applied in 2006 (parentheses) are listed below:

Closed (1)
 General License - any deer. (47)
 General License – antlered deer. (50)
 General License – antlered deer off private land, any deer on private land. (19)
 General License – antlered deer on national forest, any deer off national forest. (4)
 General License – antlerless deer off national forest. (1)
 General License – antlered mule deer, or any white-tailed deer. (20)
 General License – antlered mule deer or any white-tailed deer, switching later to any white-tailed deer only. (1)
 General License - any mule deer four points or better. (2)
 General License – antlered deer off private land, any deer on private land; switching later to any white-tailed deer for entire area. (1)
 General License – any white-tailed deer; *usually after the close of an initial general or limited quota season.* (17)
 General License – antlerless white-tailed deer; *usually after the close of an initial general or limited quota season.* (5)
 Limited Quota – any deer. (18)
 Limited Quota – antlered deer. (8)
 Limited Quota – antlerless deer [type 2] (1)
 Limited Quota – any white-tailed deer. (36)
 Limited Quota – doe or fawn deer. (36)
 Limited Quota – doe or fawn deer valid on private land only (27)
 Limited Quota – doe or fawn deer valid off national forest (2)
 Limited Quota – doe or fawn white-tailed deer (19)
 Limited Quota – doe or fawn changing later to doe or fawn white-tailed deer. (3)
 Limited Quota – any white-tailed deer; changing to doe or fawn white-tailed deer. (2)
 Limited Quota – any deer; switching later to any white-tailed deer only. (1)
 Limited Quota – antlered deer; switching later to any white-tailed deer only. (1)

The current system, while complex, provides adequate flexibility to regulate harvest of each species, both in time and location. It also provides a great deal of hunter opportunity by allowing in many instances hunting multiple seasons, areas, and for both species on a single license. This management system has not hindered population management; but enhanced our ability to regulate harvest levels of both deer species. However, decreased hunter accesses to private land and the tendency of many landowners to not encourage doe harvest have frustrated efforts to manage deer in predominately private land areas. The licenses are available, but often remain unsold or unused.

Regulatory Framework

Wyoming Statute 23-1-101(a)(i) defines “big game animal” to include deer without regard to species. For license issuance purposes, Wyoming Statute 23-2-101(b) also makes reference to “deer” without differentiating between species. Likewise, there is no regulatory definition of “deer,” “white-tailed deer,” or “mule deer.” Instead, limitations in Chapter 6, Section 3 simply state the species and sex of deer for which general or limited quota license types are valid in each hunt area. To date, this framework has functioned well.

Hunter Preferences

Recent surveys (Responsive Management 1998; and Responsive Management 2006) reveal the extent to which deer hunters in Wyoming prefer to hunt mule deer over white-tailed deer:

Over three-fourths of all deer hunters in Wyoming primarily hunt mule deer, and two-thirds state they greatly prefer to hunt mule deer. About 75% of nonresidents state their preference is to hunt mule deer. Only about 10% of nonresidents, and 17% of residents choose to pursue white-tailed deer as their species of preference.

About 10% - 15% of hunters surveyed had no preference regarding the species deer they hunted. But, half of all non-residents indicated the ability to hunt both species on the same license type is an important reason for choosing to hunt deer in Wyoming.

Another consideration is species-specific licenses would not provide much additional hunting opportunity in hunt areas with low white-tailed deer numbers, especially where those deer predominately reside on private land. This is generally the case in much of Wyoming. Rather, such a license would have unacceptably low success rates, either due to low white-tailed deer densities and/or lack of access to private land.

License Issuance

As previously mentioned, the Department has issued deer licenses in line with Alternative 3 since the 1980’s. That is, both mule deer and white-tailed deer are hunted together or separately, under the existing statutory and regulatory framework. Overall, license issuance and season structures have been designed to restrict mule deer harvest while offering increased opportunity to hunt white-tailed deer. Based on historical harvest data, these strategies have worked on a statewide basis (Figs. 1 & 2) while maintaining a high degree of management flexibility.

Mule Deer Hunter Numbers and Harvest

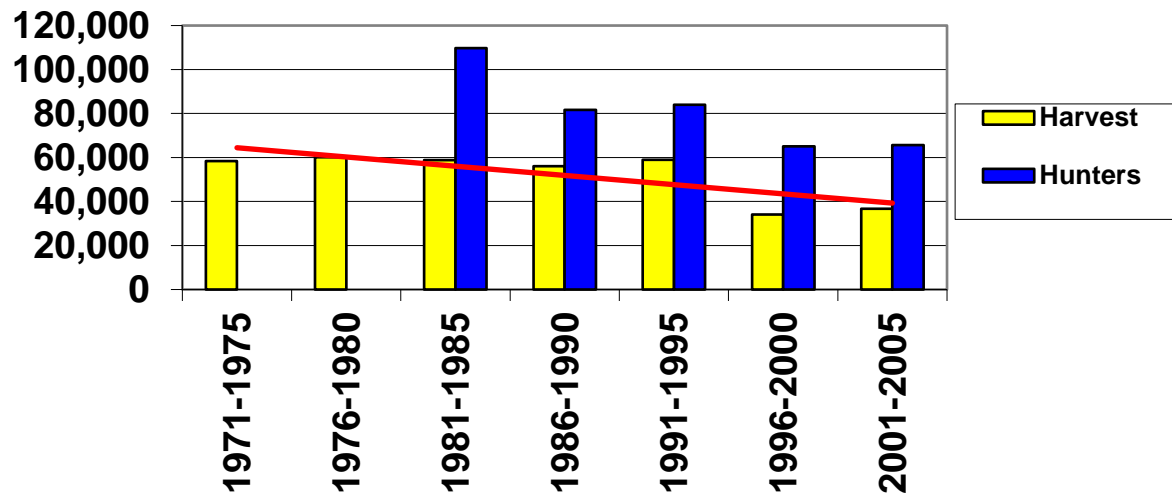


Fig. 1. Annual, Statewide Mule Deer Hunter Numbers and Harvest averaged over five-year intervals.

White-Tailed Deer Hunter Numbers and Harvest

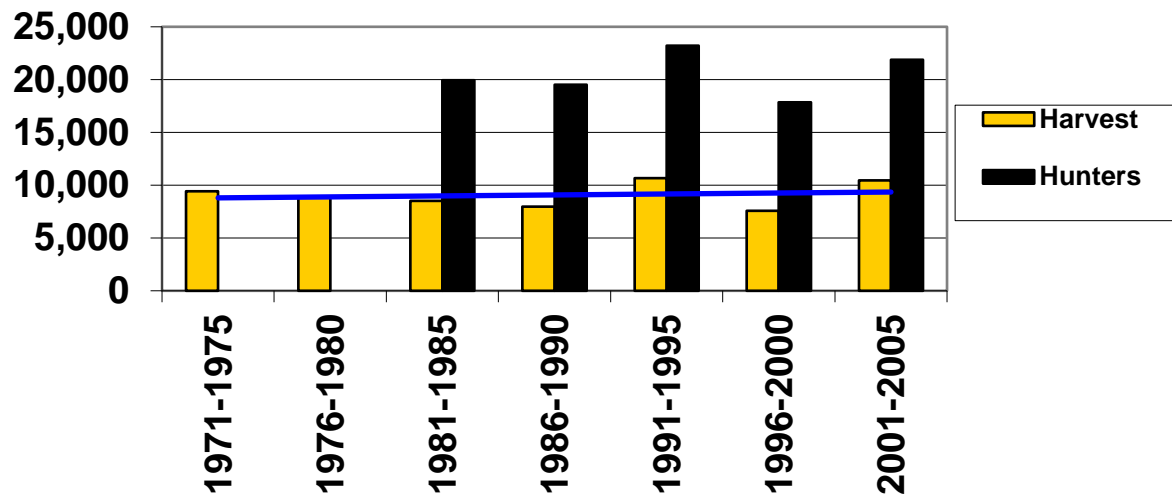
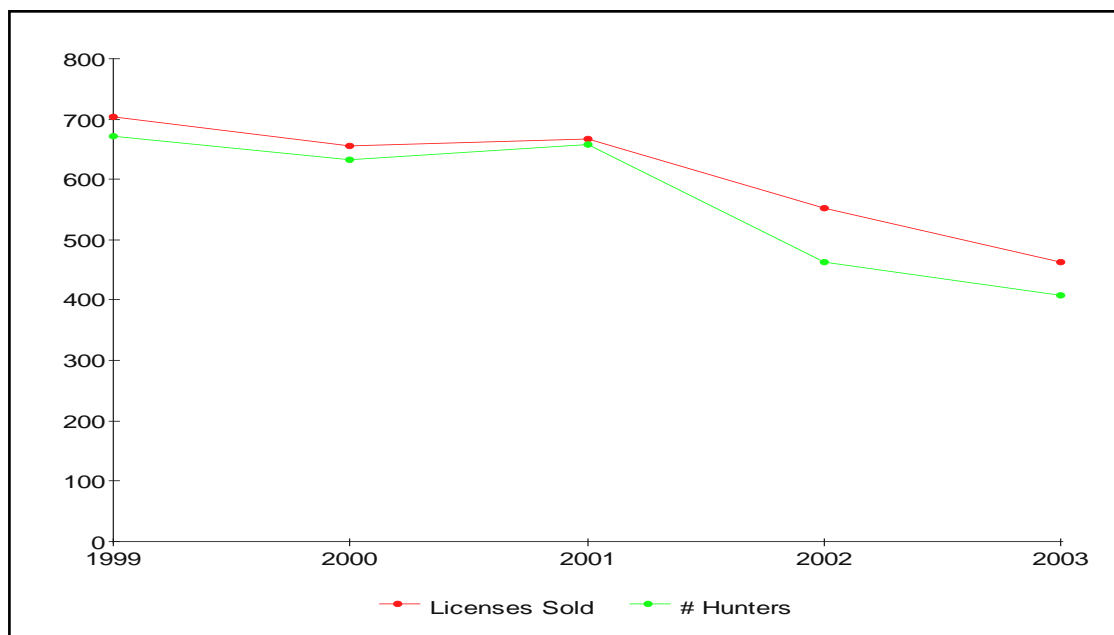


Fig. 2. Annual, Statewide White-Tailed Deer Hunter Numbers and Harvest averaged over five-year intervals.

Through much of the 1990's, deer hunters were allowed to purchase a general or limited quota deer license and an additional limited quota any white-tailed deer license. Because there was considerable competition for some of these additional licenses (many of them sold out and drawing odds were often low) some felt it more equitable to allocate buck deer hunting amongst more people. Therefore, additional any white-tailed deer hunting opportunity was discontinued in 1998.

Circumstances have changed, mostly in eastern Wyoming, regarding the sale of limited quota, any white-tailed deer licenses. For a variety of reasons, the Department now has a more difficult time selling all of the licenses available. For example, between 1999 and 2003 white-tailed deer license sales and hunters declined in the Casper Region (Fig. 3). As recently as 1999 all licenses issued were sold, but in 2003 28% of the licenses issued remained unsold. While this is not an excessive number, the downward trend is a concern. These unsold licenses represent an approximate revenue loss of \$50,000. The Department's inability to sell all of the issued any white-tailed deer license has continued since. In 2006, even with a decrease in the total number of any white-tailed deer licenses issued, 156 licenses remained unsold. This represented a potential income loss¹ of over \$40,000.00. The reduced demand for this license type may be attributed to a variety of causes, including nonresident preference to hunt mule deer, difficult access, license cost, a perceived lack of white-tailed deer or trophy quality deer, concern about chronic wasting disease, and decreased interest in hunting in general. A similar trend is evident with some limited quota and nonresident regional deer licenses. In 2006, these unsold licenses represented an income loss¹ of over \$601,000.00.

Fig. 3. Declining licenses sales and hunter participation in a representative portion of the Central White-Tailed DAU (Hunt Areas 11-15, 65, 66, 88, 167)



There are two issues associated with under subscribed deer licenses. On the one hand, unsold doe/fawn licenses limit our ability to control population size through hunting, our primary management tool. Second, unsold licenses reflect a decrease in hunter participation and consequently loss of revenue to the Department and local economies.

A major purpose of this paper was to examine the possibility of segregating licenses according to species in order to address the problem of under subscribed license sales. Most likely, doing this will compound the problem for two reasons: First, the majority of white-tailed deer in Wyoming inhabit private land, and hunting access to private land has been steadily eroded over the past 25-years. The second point is related to the first. Nonresidents hunt deer on private land to a much greater extent than residents in Wyoming, and the majority of nonresident hunters come to Wyoming to hunt mule deer

¹ Assuming all licenses sold to non-residents.

(Responsive Management 2006). Requiring these hunters to choose between species will assuredly result in oversubscribed mule deer licenses and may actually increase the number of white-tailed deer licenses remaining unsold each year.

For example, during the past five years 77% (*std. dev.*=7.0) of nonresident deer hunters reported they hunted mule deer in the Black Hills Herd Unit, while 84% (*std. dev.*=1.7) reported hunting white-tailed deer. However, the harvest composition over this same period averaged 42% mule deer and 58% white-tailed deer. Classification data and population models suggest the Black Hills deer population is comprised of about two-thirds white-tailed deer, one-third mule deer. Thus, it appears many nonresidents come to the Black Hills seeking a mule deer, and take them in a greater proportion than available, but will “settle” for a white-tailed deer, as they are the species most often encountered in a particular location.

Requiring hunters to choose between a mule deer or white-tailed deer license will result in oversubscribed mule deer licenses and highly under subscribed white-tailed deer licenses in the Black Hills, and most likely elsewhere. Assuming deer licenses in the Black Hills were apportioned based upon species availability, and all nonresidents who reported hunting mule deer would apply for a mule deer license as their first choice, it is likely drawing odds for a Region-A mule deer license would be about 2 in 5, while 2,200 or more white-tailed deer tags would remain unsold². This would result in an annual income loss of almost \$575,000.00 from Region-A alone. Segregating deer licenses according to species would also increase restrictions on residents hunting the Black Hills and other general license deer hunt areas. This would necessarily take the form of separate dates for general license hunting of mule deer and white-tailed deer, or separate limited quota licenses. Hunters traveling to the Black Hills to harvest buck deer are also the primary set of hunters who purchase doe/fawn licenses. If we significantly reduced the number of hunters in the Black Hills due to species-specific licensing, our ability to manage deer numbers through antlerless harvest would be compromised. We already cannot entice enough doe hunters to eastern Wyoming to adequately address harvest needs in many areas.

We know from past experience, allowing hunters to possess multiple licenses improves our ability to manage populations towards objective, increases license sales and revenue to the Department, and provides more hunting opportunity for some. The issue at hand with respect to under subscribed white-tailed deer licenses is how best to implement such a system. In fairness, hunters should be allowed to apply for and receive one general or oversubscribed, “high demand,” license. The challenge is how maintain equity while effectively marketing licenses that remain after the license drawings have been completed. We need to implement a workable regulatory framework enabling us to sell the remaining licenses in a fair and unbiased manner. Some perceive this problem is compounded because we are dealing with two deer species. However, a workable strategy would allow a person to harvest one-buck mule deer and one-buck white-tailed deer, or two buck white-tailed deer, provided no more than one of these licenses could be obtained through the license drawings. This strategy could be implemented by allowing people to acquire “Any White-Tailed Deer” licenses remaining after the leftover license draw (as Issue-After Licenses) in addition to a limited quota deer license they may have received in the drawing, or a general license they may purchase. This scenario would enable managers to limit mule deer take while increasing opportunity for white-tailed deer harvest. It would also increase license sales and hunting opportunity.

² It is hard to estimate the exact number of Region-A “white-tailed deer licenses” that would remain unsold under this scenario. But, because the current cap on Region-A tags is intended to limit mule deer harvest, under a species-specific system it is highly probable we would issue several thousand more “white-tailed deer licenses” than demand warrants.

The allowance to purchase additional Any White-Tailed Deer Licenses was removed in the late 1990's, and since then hunters have been limited to the annual harvest of a single buck deer, regardless of species. The Commission reinstated the ability for hunters to take two antlerless deer on doe/fawn licenses several years ago. In 2005, regulations were changed enabling hunters to harvest two pronghorn bucks and possess up to four doe/fawn deer and antelope tags in certain areas. However, about 4,000 doe/fawn licenses valid for white-tailed deer (a potential \$116,00.00 of income³) were unsold in 2006. Recently, several strategies have been proposed authorizing hunters to once again harvest up to two buck deer. Intradepartmental comments were solicited on each. These license issuance proposals included:

Option A: Create separate licenses valid for mule deer and white-tailed deer licenses by statute or regulation, and allow hunters to possess one of each annually.

Option B: Do not allow buck white-tailed deer to be hunted on general licenses after the close of the "regular" general season. Instead, require a limited quota full price license, to hunt buck white-tailed deer after the general season closes. This license type could be purchased in addition to a general or full price limited quota deer license.

Option C: Similar to Option-B. But, make all Limited Quota Any White-tailed Deer Licenses a Type 3 license⁴, and change regulatory language so Type 3 licenses remaining unsold after August 15th become "Full Price Additional Any White-tailed Deer Licenses," at which time they could be possessed in addition to another limited quota, or general deer license.

Option D: Return to the system used in early 1990's. That is, any person may apply for, or receive, one license from Group I, one license from Group II, 2 licenses from Group III, and 4 licenses from Group IV in Table 1.

Example Table 1. Deer licenses⁵.

Group	License Type	Number	Hunt Areas
I	General; Region; or Limited Quota Deer	1	
II	Type 3: Additional Full Price Any White-tailed Deer	1	
III	Type 6 or 7: Limited Quota Doe or Fawn Deer	2	List areas
IV	Type 6, 7, or 8: Limited Quota Doe or Fawn Deer	4	List areas

Option E: Use regulatory language similar to that used for antelope (Chapter 2) regarding issuance of deer licenses remaining after all drawings have been completed: "For deer, any person may apply for and receive a maximum of one (1) Limited Quota, Resident General, or Nonresident General license, EXCEPT after the initial and leftover drawings are completed any person may apply for and receive up to a maximum of two (2) remaining Limited Quota deer licenses. However, no person shall apply for and receive more than a total of two (2) Limited Quota licenses or one (1) General license and one (1) Limited Quota license."

Option F: Construct regulatory language that limits hunters to possessing only one license valid for taking a buck mule deer. But, enable hunters to take up to two buck white-tailed deer, and up to four doe or fawn white-tailed deer by purchasing unsold Limited Quota Any White-Tailed Deer and Limited Quota Doe or Fawn White-tailed Deer licenses, respectively, after the license draws have been completed. The Commission could standardize Limited Quota License types across species, with Limited Quota Any White-Tailed Deer Licenses designated Type 3, and Limited Quota Doe or Fawn White-Tailed Deer Licenses designated Type 8. Language in Chapter 2 would be adopted for issuance

³ Assuming nonresident sales.

⁴ With standardization of Limited Quota license types.

⁵ Based upon standardization of Limited Quota license types.

of licenses remaining unsold after all drawings have been completed. In addition, definitions of full and reduced priced limited quota licenses could be clarified in Chapter 44.

License Sales and Accounting

Implementing any of the license options described necessitates establishing new license fee types. This is required to conduct white-tailed deer license issuance in which new draws and/or edits can be performed. At a minimum, the fee types that would be needed are:

RWD	Resident White-Tailed Deer
RYWD	Resident Youth White-Tailed Deer
NWD	Nonresident White-Tailed Deer
NSWD	Nonresident Special White-Tailed Deer
NYWD	Nonresident Youth White-Tailed Deer

A separate license fee type is necessary to perform edits in the license draw system and new Internet Point of Sale (IPOS) automated license issuance system. The new fee types are needed to separate licenses into different drawings, and check the number of licenses a person has purchased against the number requested at the time of sale.

Allowing an individual to possess one mule deer and one white-tailed deer license, both of which are obtained in a limited quota drawing, would require the Department to establish a new species type, i.e. WD (white-tailed deer), to accommodate the new draw. The regular deer draw (Species-Deer) for an applicant's first deer license would include the current fee types (RD; RLD; RYD; RYLD; ND; NLD, NYD; NYLD; NSD). The new deer license drawing (Species-Whitetail) for the second deer license would involve the new fee types explained above. In addition, statutory requirements mandate landowner fee types and special license types for nonresidents. Finally, it is likely preference points would need to be implemented for nonresident white-tailed deer licenses, since there is no statutory separation of deer licenses by species.

The option we select has an impact on how easy or difficult it will be for the License Section to accommodate any new license type. If a new license type is issued through the limited quota drawing it will be much more difficult to implement, and the Department might not be able to accommodate the increased number of applications during the current application period. A system authorizing additional licenses as issue-after licenses would be easier to implement. The Department's License Section provided the following comments on each option:

Option A

This option requires two separate drawings, one for full price mule deer and one for full price white-tailed deer licenses. Unfortunately, it would not be possible to combine the drawings and choices for both deer species on the same application form in order to allocate two different licenses in the same license draw. New license fee types and species types would be needed. If an individual desired a license for each species, they would have to submit two, separate applications. Further, allowance for 1st, 2nd and 3rd choice selections would have to be made.

In 2005, the Department processed 35,528 limited quota and regional nonresident deer applications and 13,706 limited quota resident deer applications. Approximately, 35,000 general deer licenses were issued over-the-counter at license selling agents. If all or most persons who currently apply for a full price license also apply for a second white-tailed deer license, the License Section would have serious

problems attempting to process additional applications within the required time frame. As the Department implements Internet application processing, traditional mail in application volume will decrease. However, it is not realistic to anticipate relief for two to three years. Presently, the License Section could not accommodate this option without significantly advancing the application deadline.

For such a proposal to work, the application period for residents would have to be similar to that of non-residents, or perhaps even during the month of January. In either case, residents would need to apply for deer licenses before the Commission sets seasons.

Option B

From the perspective of the License Section, there is very little difference between Option A and Option B. Under Option B, a hunter could not use a general deer license for a late season white-tailed deer hunt. The method in which the “second deer license” is issued has significant impacts on the License Section, because it is a second license.

If this “second deer” license is issued through a limited quota drawing, the same issues described under Option A would apply, necessitating a new license type and separate draw. If this license were obtained as an Issue-After License after all the drawings were conducted, the license could be sold through the proposed electronic license system at automated agent locations. This would be much easier to implement than accommodating an additional limited quota drawing for the second full price white-tailed deer license.

Option C

This option allows an individual to obtain one deer license in the regular or leftover drawing. The current license draw would remain unchanged, and individual would have to choose between applying for a general deer or limited quota deer license. If type 3 licenses remained unsold after these drawings, they would be made available as a second deer license; or if an individual had not obtained a full priced deer license, the person could purchase a general deer license and one Type 3 license, or two Type 3 licenses as issue-after licenses. This option could be implemented similarly to the manner in which a second type 1 antelope license is allowed in certain hunt areas. Given this alternative, there really is no need to even consider option B. However, if local game managers want to limit the use of general licenses after the close of the “regular” season, such a limitation could easily be incorporated into all the options proposed.

Option D

From the License Section’s perspective, this method of license issuance was very confusing to all involved when it was implemented. It was extremely difficult to explain to applicants, Department personnel, and license selling agents. In addition, it was very complex to program the limited quota license draw system for this type of editing and license draw processing. The License Section strongly discourages this option from being considered.

Option E

This option allows a person to have two full priced deer licenses. One of those licenses could be obtained in either the initial or leftover drawing, and the other after the drawings are completed. A person is limited to receiving one full priced deer license though the entire drawing process. The “second deer license” must be obtained after all drawings are completed. However, if neither a general license was purchased nor a full priced deer license obtained in the drawing, the person could obtain two

full priced issue-after licenses. The bottom line is an individual could obtain two full priced deer licenses without regard to species (for example two licenses valid for buck mule deer). Implementation would essentially be identical to Option C.

Option F

From the License Section's perspective, option F is not different than Option E; except, an individual is limited to one license for antlered mule deer. Under F, the second full priced license must be a Type 3 (any white-tailed deer). In reality, options C, E and F are basically similar, but provide different examples of how a "second" white-tailed deer license could be issued.

Harvest Survey Costs

Biological Services obtained cost estimates for various changes to deer licensing systems and regulations from PA Consulting Services on November 17, 2006. Cost estimates for a variety of license issuance scenarios were generated and compared to the current system. Options explored included:
Allow Type 3 additional white-tailed deer licenses.

Treat mule deer and white-tailed deer as separate species under 2 scenarios:

With no additional license sales.

With license sales increased to 100,000.

Issue totally limited quota licenses for deer.

Standardize limitations specified according to license types for all species.

The most significant cost increase (\$28,000) would result from issuing separate licenses for the each species of deer, assuming total sales increased to 100,000 licenses. All other cost increases and reductions were fairly nominal, and probably not a major consideration in selecting a strategy. As a reference point, the 2005 cost of the big game harvest survey (deer, elk, pronghorn) was about \$308,000. In addition, another \$30,000 was expended for data entry, and less than \$1,000.00 for other miscellaneous costs. The consultant was very enthusiastic about the potential for having standardized license types. Details of each scenario are provided below.

Scenario 1: *Additional Type 3 White deer license*

This scenario will allow deer hunters to have 2 full price licenses valid for buck deer. In addition to the current full price general and limited quota license types, a new license type (Type 3) would be valid for any white-tailed deer. The following assumptions were made:

The existing license types (general and limited quota) would remain about the same.

Total deer license sales would increase to 100,000.

The new Type 3 license will be available in approximately 50% of the existing hunt areas.

Based our experience with antelope, approximately 20% of license holders would purchase an additional type 5 license in these hunt areas.

On average, 50% of the limited quota licenses deer would be sampled in the harvest survey.

The change would require sampling about 5,000 additional licenses.

The survey (both mail and Internet) would be redesigned to more closely resemble the antelope survey, which allows for two full price licenses.

The cost of this scenario would be approximately \$11,500 with \$3,000 of this being onetime costs associated survey changes. In subsequent years, the cost for this option would be \$8,500.

Scenario 2: *Treat white-tailed and mule deer as two separate species, with no license sales increase*

Under this scenario, white-tailed and mule deer would be treated as separate species for purposes of licensing, surveying, and harvest reporting. White-tailed deer would be hunted in most areas of the state, and mule deer in all areas of the state. The following assumptions were made:

A general license, valid for both species, would remain available.

Total license sales would remain the same.

Approximately 2/3 of these licenses will be mule deer licenses.

A sample size increase is not needed, even if deer are treated as two species.

Mail or Internet survey instruments would be specific to each species.

A separate harvest report (and JCR) would be prepared for each species.

The cost of scenario2 would be about \$12,500 with \$4,500 of this being a one-time cost for survey changes. In subsequent years, the cost for this option with no increased sales and two separate reports would be \$8,000.

Scenario 3: Treat white-tailed and mule deer as two separate species, and license sales increase to 100,000

Under this scenario, white-tailed and mule deer would be treated as separate species for purposes of licensing, surveying, and harvest reporting. White-tailed deer would be hunted in most areas of the state, and mule deer in all areas of the state. The following are assumed:

A general license, valid for both species, would remain available.

Total deer license sales would increase by 15,000 and approximately two-thirds of the licenses would be mule deer licenses.

The sample size would increase by about 9,500.

Mail or Internet survey instruments would be specific to each species.

A separate harvest report (and JCR) would be prepared for each species.

The cost of this option is \$27,805 with \$4,500 of this being a one-time cost for survey changes. In subsequent years, the cost for this option with the increased sample size and two separate reports would be \$23,305. As the sample size increases, per unit costs would decrease. Thus, for each additional 10,000 licenses sold, 5,000 licenses would be sampled. The additional cost would be \$8,750 for each 5,000 sampled.

Scenario 4: Replace all general deer licenses with Limited Quota

In this example, all general deer licenses would be eliminated and replaced with a Type 1 Limited Quota license. Everything else from the current system would remain the same. The following assumptions are made:

Total deer license sales would increase to 100,000.

On average, 50% of the limited quota licenses would be sampled, compared to 66% of general licenses. Even with increased sales, this would result in a reduction in sample size of 3,000 license holders.

The cost savings for this option would be \$4,500.

Scenario 5 – Standardize limitations specified according to license types for all species

PA consulting is highly favorable toward this scenario stating, “We love this scenario!” For the first year this is in effect, there would be no cost implications. In subsequent years, it would result in a cost savings of \$1,500.

Recommendations:

Adopt Option F for license issuance, beginning with the 2008 application packet and season setting process. Standardize all Limited Quota Any White-Tailed Deer License as Type 3, and Doe or Fawn White-Tailed Deer Licenses as Type 8. Allow hunters to acquire an Issue-After Type 3 license in addition to holding a General or Limited Quota deer license. Further, allow hunters to acquire up to four Type 8 licenses as Issue-After Licenses.

In 2008, standardize limited quota license types applied to all species⁶ in the application packets and thru Commission regulation, as follows:

Type 1 & 2 – Antlered or Any

Type 3 – Any White-Tailed Deer

Type 4 & 5 – Full Priced Antlerless

Type 6 & 7 – Reduced Priced Antlerless

Type 8 – Reduced Priced Doe or Fawn White-Tailed Deer

Type 9 – Archery Only

Type 0 – Other Specialty Weapon Only

Ensure “Issue-After” is clearly marked on all limited quota licenses sold after license drawings are completed to ensure regulatory compliance in the field.

All “full-priced antlerless” and “reduced-priced doe or fawn” deer licenses allowing harvest of mule deer or both species should be standardized as a “reduced price” type 6 licenses, with additional limitations specified by regulation or designated under type 7.

Justification:

The current system of deer license issuance adequately accommodates species-specific management of white-tailed deer and mule deer. It also provides flexibility for local big game managers to tailor seasons, and opportunity for hunters to hunt both species in multiple areas on a single license. Gathering sufficient data for season setting and justification has not been a problem under this system. Essentially, conclusions from two previous evaluations of our deer licensing system (Cleveland et al. 1987 & Lanka et al., 1989) are still valid. Most of their recommendations are being implemented today. It may be possible to increase the Department’s income by segregating licenses valid for mule deer and white-tailed deer. However, costs associated with the license application and draw process, along with the harvest survey, would increase. Net profit or loss would depend on the number of hunters who purchase both license types. The effectiveness of deer management would also hinge on the number of hunters willing to purchase licenses for both species.

Most hunters prefer a license enabling them to hunt either deer species at some point during the hunting season. Hunters would not receive segregating licenses by species favorably. All deer hunters would have to select the species they wanted to hunt. A preferred approach is to simply allow the minority of hunters desiring to hunt white-tailed deer the ability to do so where this opportunity can be enhanced. Standardizing limitations according to license types will reduce complexity of regulations and hunter confusion. In addition, it will reduce harvest survey costs and simplify license issuance and accounting. Designating white-tailed deer licenses, as types 3 & 8, will improve species-specific estimates from the harvest survey if this ever becomes an issue.

Based on the 2006 antelope, deer, and elk regulations, all current usages of license types and seasons in all hunt areas could be carried forward under the license type standardization proposed.

Our current license programming system has been tested, and there is no problem using a Type 0 license.

If licenses valid for any white-tailed deer and antlerless white-tailed deer are standardized, other license types can be used to designate limited quota seasons allowing take of mule deer only, or either species.

This would reduce regulatory language necessary to prevent harvest of two mule deer bucks.

Only one hunt area in 2006 had a full priced, limited quota antlerless deer license (Area 131 type 2).

Very few of these licenses are issued (25), and they are restricted to a portion of the hunt area. We

⁶ This recommendation reaches beyond the scope of deer, but is needed to make positive changes for public understanding, license issuance, and harvest survey work. The proposed definitions limit type 3 and 8 licenses to white-tailed deer. Consideration could be given to designating standard types 3 & 8 for all species, or as further, species-specific “additional” licenses. However, having three antlered / any, or three reduced priced tags for a given hunt area would increase regulation complexity, and is likely not necessary for reaching management objectives.

recommend converting these to type 6 licenses for consistency. This change would entail little cost or conflict, but would greatly simplify the deer regulations. In the future, high demand antlerless deer tags could be designated as type 4 or 5 under the proposed standardized license types if needed.

White-Tailed deer licenses that remain unsold represent lost opportunity for hunters and lost income to the Department. In addition, our ability to manage deer populations is hindered. Allowing hunters to acquire leftover type 3 & 8 licenses in addition to a general or limited quota licenses should provide additional hunting opportunity and increase harvest of white-tailed deer, without allowing hunters being to take more than one buck mule deer annually.

In the future, game managers (if they desired) could issue type 3 & 8 licenses rather than extending seasons for General, Limited Quota, or Doe/Fawn licenses where take is restricted to white-tailed deer only. This would be desirable where there is sufficient purchase demand for Issue-After type 3 and 8 licenses in addition to other deer licenses. Such action would increase Department income. The definitions of Limited Quota Reduced Price Doe/Fawn and Cow/Calf Licenses in Chapter 44 are cumbersome and confusing. The easiest way to clarify this situation, and make it easier to understand, would be to define full priced limited quota licenses as types 0-5, and 9; and reduced priced limited quota licenses as type 6, 7, and 8.

Suggested Regulatory Language:

Chapter 2:

Section 4: Issuance of Deer and Antelope Limited Quota Licenses, Reduced Price Doe or Fawn Licenses, Elk Limited Quota Licenses, and Reduced Price Cow or Calf Licenses.⁷

For deer any person may apply for and receive a maximum of one (1) Limited Quota Type 0-5, or 9; Resident General; or Nonresident Region General license. However, after the initial and leftover drawings are completed, a person may apply for and receive up to two (2) Issue-After Limited Quota Type 3 (any white-tailed deer) Licenses. However, no person shall apply for or receive more than a total of two (2) deer licenses other than Limited Quota type 6, 7, and 8 licenses.

For deer, any person may apply for and receive a maximum of two (2) limited quota type 6, 7, or 8 deer licenses. EXCEPT, on or after August 15 any person may apply for and receive up to four (4) limited quota type 8 licenses, or type 6 and 7 licenses valid in hunt areas *[list areas]*. However, no person shall apply for and receive more than a total of four (4) limited quota type 6, 7, or 8 licenses in any combination.

⁷ With standardization of license types, it would be simple to combine deer and elk Sections 4(a) & (b). In addition, antelope could also be put here, and language in subsection (b) further simplified, if area restrictions were lifted on multiple Issue-After Licenses. Chapter 2 stipulates procedures for purchasing “Issue-After” licenses. Chapter 44 provides a definition for “Issue-After” licenses.

Chapter 6:

During season setting, ensure use of standardized license types in Section 3(a):

Type 1 & 2 – Antlered or Any Deer

Type 3 – Any White-Tailed Deer

Type 4 & 5 – Full Priced Antlerless Deer

Type 6 & 7 – Reduced Priced Antlerless Deer

Type 8 – Reduced Priced Antlerless Doe or Fawn White-Tailed Deer

Type 9 – Archery Only

Type 0 – Other Specialty Weapon Only

Chapter 44:

Section 3. Definitions:

Replace Definitions of “Limited Quota Licenses,” Limited Quota Reduced Price Cow or Calf License,” and “Limited Quotas Reduced Priced Doe or Fawn License” with the following:

(aa) “Limited Quota Type 0, 1, 2, or 9, Licenses” means full priced licenses limited in number and valid only in a specific hunt area(s) or portion(s) of a hunt area, for a specified type of weapon, for a specified sex, age class or species of big game, trophy game, or wild turkey during specified season dates.

(bb) “Limited Quota Type 3 License” means a full priced license limited in number and valid for any white-tailed deer in a specific hunt area(s) or a portion(s) of a hunt area in accordance with the limitations set forth in these regulations.

“Limited Quota Type 4 or 5 Licenses” means a full priced license, which may be authorized in a specific hunt area(s) or a portion(s) of a hunt area, allowing a person to take doe or fawn; or cow or calf animals.

“Limited Quota Type 6 or 7 Licenses” means a reduced priced license, which may be authorized in a specific hunt area(s) or a portion(s) of a hunt area allowing a person to take doe or fawn; or cow or calf animals independent of what may be taken on a general license or limited quota license types other than types 6, 7, or 8.

“Limited Quota Type 8 License” means a reduced priced license, which may be authorized in a specific hunt area(s) or a portion(s) of a hunt area allowing a person to take doe or fawn white-tailed deer independent of what may be taken on a general license or limited quota license types other than types 6, 7, or 8.

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