

# LANDER/GREEN MOUNTAIN MULE DEER INITIATIVE



**Lander/Green Mountain Mule Deer  
Working Group's Recommendations for the  
South Wind River & Sweetwater Herd Units**

**v. 08/10/2015**

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## **LANDER/GREEN MOUNTAIN MULE DEER WORKING GROUP MEMBERS**

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Stan Harter	Lander	WGFD (Wildlife Biologist)
Brad Hovinga*	Lander	WGFD (Game Warden)
Joe Hutto	Lander	Public at-large
David Killebrew	Lander	Landowner
Marla Lemm	Lander	Business Owner (The Good Place)
Ken Metzler	Riverton	Outfitter
Jared Oakleaf	Lander	Archery Hunter
Ember Oakley	Riverton	Public at-large
Harold Schultz	Riverton	Wyoming Wildlife Federation
Travis Stevenson*	Jeffrey City	Ranch Manager
Illana Williams*	Lander	Wyoming Outdoor Council

*\* Original Member - no longer part of the group as of June 30, 2015*

## **ACKNOWLEDGEMENTS**

The Lander/Green Mountain Mule Deer Working Group (Working Group) wishes to thank Wyoming Game and Fish Department for the opportunity they afforded us to participate in future management of the South Wind River and Sweetwater Mule Deer Herd Units. In particular we want to acknowledge the tireless efforts of our facilitator, Rene Schell. Rene's efforts were paramount in keeping us on task and making us discuss and debate the difficult issues and to work to achieve the recommendations made in this document. Brady Frude, Teal Joseph, and Linnea Sailor provided invaluable assistance to Rene and the Working Group by recording thorough meeting minutes. Similarly, we thank Daryl Lutz for his guidance through this process. We also wish to thank the many people who routinely or occasionally participated and assisted us at our monthly meetings. We would like to recognize Wyoming Game and Commissioner Richard Klouda for his participation at many of the meetings. We thank the many "outside" speakers who provided us technical advice or local knowledge and perspective. Finally, we thank the constituents we, as Working Group members, represented during this endeavor. Your insight, input, and advice were most helpful and it is our hope they are reflected in this document.

## **PREFACE**

The Lander/Green Mountain Mule Deer Initiative and Working Group were started by Wyoming Game and Fish Department (WGFD) to apply and adapt the overarching objectives and strategies of the Wyoming Mule Deer Initiative to address herd-specific issues in the South Wind River and the Sweetwater herd units. The continued decline in the number of mule deer and hunter satisfaction in the South Wind River and Sweetwater herd units was the primary focus of these efforts.

The Working Group and collaborative process was governed by a charter outlining goals, sideboards, outcomes, and timelines. The Working Group is comprised of 13 individuals representing the public at large, landowners/livestock producers, hunters (one was a youth hunter), outfitters, area businesses, and WGFD. To ensure recommendations were made to best address all those interested in these herd units, the Working Group and WGFD distributed a survey which assessed the attitudes and concerns of those who hunted in these herd units.

It is recognized mule deer management entails a myriad of biological considerations. In addition, management decisions and strategies must also integrate society's expectations. These tenets are part and parcel with the premises of the North American Wildlife Conservation Model. The most effective management strategies are founded in the species' biology and also supported by society.

The Working Group, in concert with public input, identified 8 major needs or issues contributing to reduced hunter satisfaction and declining mule deer numbers including: Research, Adaptive Management, Hunting Season Structure, Habitat Management, Education and Public Outreach, All Terrain Vehicles (ATVs), Predator Management, and WGFD Presence and Law Enforcement.

The Working Group developed recommendations with the intent that they would be useful for WGFD to address management challenges in these herd units.

## INTRODUCTION

A statewide Mule Deer Initiative (MDI) written by the Wyoming Game and Fish Department (WGFD) was adopted by the Wyoming Game and Fish Commission (WGFC) in July 2007, and updated in July 2015. The MDI outlines factors contributing to declining mule deer populations and identifies strategies to, at minimum, sustain current deer numbers.

The purpose of the Lander/Green Mountain Mule Deer Initiative and the Lander/Green Mountain Mule Deer Working Group (Working Group) is to apply and adapt the overarching strategies and objectives of the statewide MDI to address herd-specific issues in the South Wind River and the Sweetwater herd units. WGFD undertook this intensive process to engage the public and systematically garner and utilize their input. This process included a series of collaborative workshops and the formation of the Working Group. The Working Group was established after a community wide collaborative workshop. The Working Group and collaborative process was governed by a charter (Appendix A). The Working Group and collaborative process facilitated information exchange and increased understanding of the issues and concerns related to these mule deer herds. A series of collaborative workshops and nearly monthly Working Group meetings were held starting in April 2014 and culminated in recommendations presented and discussed at a final workshop in December 2015.

In the South Wind River and Sweetwater herd units (Figure 1) management is guided by a post-season population size objective. The objectives for the South Wind River and Sweetwater herd units are 11,000 and 4,500 mule deer, respectively. WGFD manages within 20% of these WGFC approved post-season population size objectives. Both objectives were re-assessed and changed in 2015 and reflect re-calibrated spreadsheet population estimates (and a sightability estimate in the South Wind River herd unit), the desires of hunters and landowners, and the number of mule deer WGFD believes the habitat can sustain in each herd unit. Based on trends of mule deer numbers, harvest, and fawn production and recruitment, these mule deer populations have been declining since approximately 2008 or 2009. These declines are due to a combination of the factors or issues addressed in the Working Group's recommendations. Though all of the issues identified are important, the Working Group recognized the primary importance of degraded habitat conditions and fawn recruitment and the need to address issues focused on the quality of the hunting experience in both herd units.

The management challenges in the South Wind River and Sweetwater herd units are complex as they affect the biology of mule deer, our ability to sustain them, and the people who enjoy them. Mule deer management entails a myriad of biological considerations. We must also consider and integrate society's expectations into management decisions and strategies. These tenets are part and parcel with the premises of the North American Wildlife Conservation model. The most effective management strategies are founded in the species' biology and also supported by society. A part of complexity is change and for that reason it is recognized these recommendations are not static, but must be adapted as conditions and circumstances dictate. Because of this complexity and need for change, it is critical all who are affected continue to be engaged in the collaborative process.

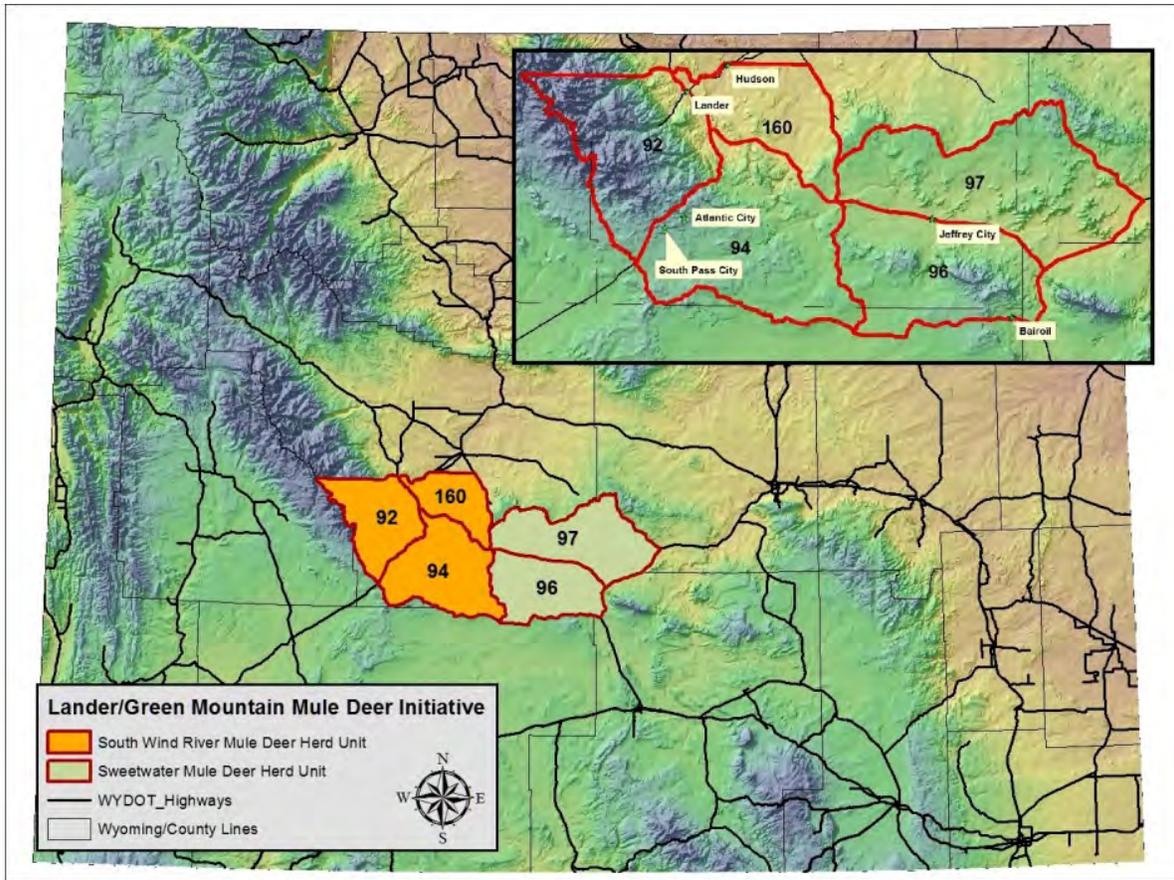


Figure 1. South Wind River and Sweetwater Mule Deer Herd Units in Wyoming

During the workshops and the Working Group's sessions, 8 major needs or issues were identified contributing to reduced hunter satisfaction and declining mule deer numbers including: Research, Adaptive Management, Hunting Season Structure, Habitat Management, Education and Public Outreach, All Terrain Vehicles (ATVs), Predator Management, and WGFD Presence and Law Enforcement.

The Working Group offers the following recommendations with the intent they would be effective for WGFD to address the factors identified and the following management needs:

- 1) Identify factors that limit mule deer populations and impact the condition of their habitats;
- 2) Reduce hunter crowding to improve the quality of the hunting experience and possibly increase buck quality;
- 3) Secure adequate funding to effectively implement management strategies;
- 4) Explore and expand partnerships with federal land management agencies, landowners, sportspersons, and others; and
- 5) Continue to encourage public involvement in, and support of management actions.

# THE WORKING GROUP AND THE COLLABORATIVE PROCESS

All Wyoming wildlife is a public resource. The Working Group recognized that public involvement is vital to attain support for future mule deer management in the South Wind River and Sweetwater herd units. To ensure public involvement, the Working Group and WGFD took a series of steps to obtain feedback from a broad range of constituents, including persons living in the Lander and Riverton areas and individuals who hunt in these herd units but live elsewhere.

WGFD has engaged with the public through a “collaborative learning” process through the MDI since 2008. Collaborative public involvement has been instituted in the Lander Region during the December post-season setting meetings since 2011. Collaborative learning enables stakeholders, including the initiating agency to discuss issues in an open forum, allowing for meaningful dialogue, and active learning. Collaborative learning does not strive to achieve a final consensus or majority vote, but emphasizes learning and mutual understanding. The goal is to allow participants to be fully engaged in the process, learn from each other about the situation, and work toward improvement of issues identified. This process is most effective when issues are complex and competing interests and values are represented and is based on the following principles (Clements, 2007):

- 1. Interdependent parties work together to affect the future of an issue of shared interests;*
- 2. Improvement rather than solution is the goal;*
- 3. The situation and progress rather than problem and conflict are the focus.*
- 4. Learning and benefits are owned by all stakeholders. The creation, maintenance and progress of a collaborative learning process is owned by WGFD and all stakeholders.*
- 5. Concerns and interests rather than positions are emphasized.*
- 6. Interrelated rather than linear thinking is emphasized.*
- 7. Through shared learning and transparency, collaborative learning creates equal access to information, allowing solutions to emerge that otherwise could not.*

Public participation through collaborative learning ensures all stakeholders obtain an understanding of the art and science of wildlife management. That includes the science and biology of mule deer and a better appreciation of society’s diverse expectations. Through CL and the WMDI, all biological and sociological data and information are brought to the table. Through the CL process we have successfully married the biological constraints or opportunities with society’s expectations and desires. WGFD intends to continue collaborative public involvement in the South Wind River and Sweetwater herd units through annual updates to the Working Group and open dialog with the public at December and spring season setting meetings.

WGFD implemented a citizen based working group/collaborative approach in April 2014 to assist WGFD in mapping the future of mule deer management in the South Wind River and Sweetwater herd units. WGFD developed a charter (Appendix A) to govern the Working Groups’ construct, goals, scope of responsibility and authority, and a time-line. WGFD acknowledged the need to provide a collaborative interface between the Working Group and the public. So, the Working

Groups' charter included provisions to conduct 3 collaborative workshops to present information, ideas and recommendations to the public for their consideration, thoughts, and feedback.

WGFD solicited interest from the public to develop a list of those wanting to serve on the Working Group. All interested individuals were asked to provide a short paragraph or two summarizing what they could contribute to the Working Group. The Working Group was initially comprised of 13 individuals who represent sportspersons, landowners, outfitters, Lander/Riverton businesses and the Game and Fish and included:

- 2 - Public at large
- 2 - Landowners/livestock producers (may include ranch managers) with interests in the aforementioned herd units/hunt areas.
- 3 - Hunters (one youth hunter, one archery hunter)
- 1 - Outfitter
- 1 - Area business person
- 2 - Non-Governmental Organization representatives
- 2 - WGFD field level wildlife managers

WGFD selected the 11 public participants from the 22 applications received ensuring the selections for the 13 positions represented the interests/groups listed above. WGFD personnel on the Working Group included one of the district Game Wardens and the district Wildlife Biologist.

To ensure recommendations were made to best address all who are interested in these herd units, it was recognized the Working Group and WGFD would benefit from a survey assessing the attitudes and concerns from those who hunted in these herd units. This was accomplished through an internet based survey during summer 2014 (Appendix B). The survey participants included resident and non-resident hunters. Survey questions were based on similar surveys conducted in the Platte Valley in 2011 and the Wyoming Range in 2008. Some questions also came from a similar survey conducted in 2012 that addressed attitudes of deer hunters statewide. Early involvement of identified stakeholders assured issues of greatest concern were addressed, and also enabled the Working Group to consider responses from persons who were unable to attend the workshop in April or the Working Groups' meetings. In summary the Working Group learned from the survey:

1. Satisfaction is low among hunters in the hunt areas encompassed by the South Wind River and Sweetwater herd units;
2. Outdoor experience, presence of large antlered bucks, harvest success, and time with family/friends contributed most to a quality hunt;
3. Conversely, not enough game and hunter crowding contributed most to dissatisfaction;
4. Fewer people agreed there were adequate numbers of mule deer bucks in these herds;
5. Similarly, fewer people found the number of deer in these herd units acceptable;
6. Habitat is recognized as the single most important factor or constraint to mule deer numbers;
7. Respondents favored managing for "trophy" bucks;
8. Respondents were split in their opinion on "choosing your weapon";
9. A majority of respondents support limiting the number of hunters in the field;
10. Respondents were split between those favoring general license season vs. those favoring limited quota seasons, and;
11. A strong majority of respondents recognized both habitat quality and quantity was important to sustain mule deer in the South Wind River and Sweetwater herd units.

The issues, objectives, and strategies in this document are based on results of the collaborative learning process starting in April 2014 at WGFD's collaborative workshop and on the collaboration among Working Group members and between the Working Group, the public, and WGFD from June 2014 through December 2015. The April 2014 workshop was attended by 50 people. During this first workshop, participants were provided information about the collaborative learning public involvement process and given background on the South Wind River and Sweetwater herd units. They were also provided with the Working Group charter and asked to consider volunteering to participate in the Working Group. They were then asked to break into small groups to discuss, list, and prioritize those factors that contribute to or affect the quality of a mule deer for each of them and for all others. Those factors included: declining mule deer populations, habitat, declining hunting quality, ATVs, declining buck quality, predator management, access, youth hunting opportunity, WGFD presence, and hunter ethics. The collaborative learning process utilized by the Working Group was structured around these issues. Objectives, strategies and actions are presented in this document as improvements to each issue.

Starting in June 2014 the Working Group met 15 times and participated in 2 collaborative workshops/meetings in Lander to learn more about the important issues and public expectations and to present recommendations to garner feedback and input from the public. A total of 78 people attended the first series of workshops held in December 2014 in Lander, Riverton, and Rawlins. The Working Group presented short-term hunting season recommendations including:

1. Extend white-tailed deer hunting opportunity;
2. Restrict youth and archery hunters to the same limitations as the regular season, and
3. Remove the antler point restrictions (APRs) that had been in place the previous 3 seasons.

All three recommendations were positively received by the public.

At their second workshop the Working Group presented this document, reviewed the recommendations made and focused much of the attention on the proposed limited-quota split season structure.....(Will be updated after December 2015 public meeting)

The Working Group established sideboards and processes to conduct business and decision making.

The Five Finger Scale Decision Making Method was adopted that:

1. Encourages consensus but does not demand it.
2. Uses a majority vote that is dependent on thorough deliberation and contingent on the facilitator and the partners attempting to achieve consensus.
3. Uses adaptive management for partners to learn about the effectiveness of their decisions, consensus or majority vote.

Participants show their level of agreement by the number of fingers they hold up:

- 5 Fingers:** Complete Support (I like it very much)
- 4 Fingers:** Support (I'm very comfortable with this)
- 3 Fingers:** Agreement with Reservations (I can live with it)
- 2 Fingers:** Mild Agreement (I don't like this, but my reservations are not enough to hold up the process)
- 1 Finger:** Disagreement (I don't support the proposal)

If all members of the group present express approval at levels 2, 3, 4 or 5 then the proposal is agreed to and constitutes a consensus recommendation. The challenge to the group is to try to move people present from a lower to a higher number. If some members continue to disagree (level 1) after the group has tried to address their concerns, then consensus has not been reached and objections will be documented for future discussion. If two-thirds of the members present agree at a level 3 or better, the proposal moves forward. The Working Group also agreed to a tentative timeline to address the goals and expectations outlined in the charter (Table 1).

*Table 1. Lander / Green Mountain Mule Deer Working Group Collaborative Process Timeline*

Step 1 – AUG 2014	Step 2 – OCT 2014	Step 3- DEC 2014	Step 4 - JUNE 2015	Step 5 – AUG 2015	Step 6 - NOV/DEC 2015
Gain common understanding of issues, opportunities, mule deer biology, and Working Group processes (i.e., select a chairperson, decision making, etc.).	Consider and explore potential actions, short- and long-term.	Present summary of progress to public first week of December. Involve the public collaboratively to provide input on progress and identify issues not considered.  If ready, develop hunting season proposals for the 2015 hunting seasons. Working Group presents proposal(s) to WGFD in November, and if approved, to the public the first week of December for inclusion in the 2015 hunting season application information.	Draft short- and long- term recommendations and review with the public collaboratively. Develop and submit final recommendations	WGFD considers working group recommendations. Start work to develop implementation.	Present final recommendations to public and WGFD, and if approved, hunting season changes included in 2016 hunting season application information

# MULE DEER IN THE SOUTH WIND RIVER AND SWEETWATER HERD UNITS

## South Wind River Mule Deer

The South Wind River Mule Deer (*Odocoileus hemionus*) Herd Unit consists of 3 hunt areas (92, 94, 160) at the southern end of the Wind River Mountains. The herd unit contains approximately 1,620 mi<sup>2</sup> of occupied habitat within a total area of 1,940 mi<sup>2</sup>, with unoccupied habitats occurring primarily in the southern and eastern portions of the herd unit. Land within the herd unit is 77% Federal (Bureau of Land Management, U.S. Forest Service, Department of Defense/National Guard), 7% State Land, and 16% privately owned (Figure 2).

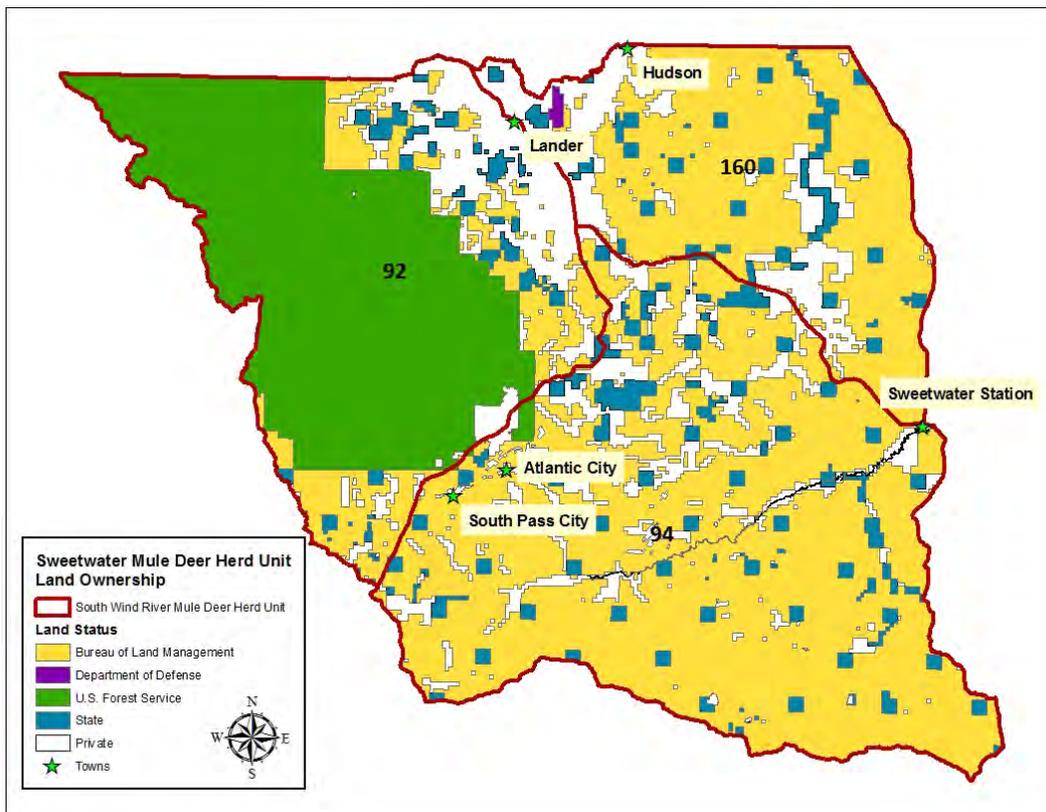


Figure 2. Land ownership in the South Wind River herd unit.

Native browse plants important to mule deer in this herd unit include big sagebrush (*Artemisia tridentata*), antelope bitterbrush (*Purshia tridentata*), silver sagebrush (*Artemisia cana*), three-tip sagebrush (*Artemisia tripartita*), and mixed mountain shrub stands which include skunkbush sumac (*Rhus trilobata*), chokecherry (*Prunus virginiana*), snowberry (*Symphoricarpos albus*). Other predominant and important vegetation species include aspen (*Populus tremuloides*), lodgepole pine (*Pinus contorta*), limber pine (*Pinus flexilis*), Douglas fir (*Pseudotsuga menziessi*), juniper (*Juniperus spp.*), and the various grasses and forbs associated with these vegetation types. Precipitation levels range from approximately 8 - 10 inches at lower elevations near Beaver Creek and Sand Draw to nearly 36 inches at upper elevations of the Wind River Mountains.

The current management objective for the South Wind River herd unit is a post-season population of 11,000 mule deer. The latest population model produces estimates aligned with trends observed in buck harvest, fawn recruitment, and buck/doe ratios, and matches the professional perceptions of field personnel and public opinion about mule deer population trends. This herd unit is also designated for recreational management and is, therefore, managed to maximize hunter opportunity while maintaining buck/doe ratios from 20 - 29 bucks per 100 does. The total buck/doe ratio for South Wind River mule deer has averaged 22 bucks per 100 does since 1994, and has stayed within the recreational management range since 2004 (Figure 3).

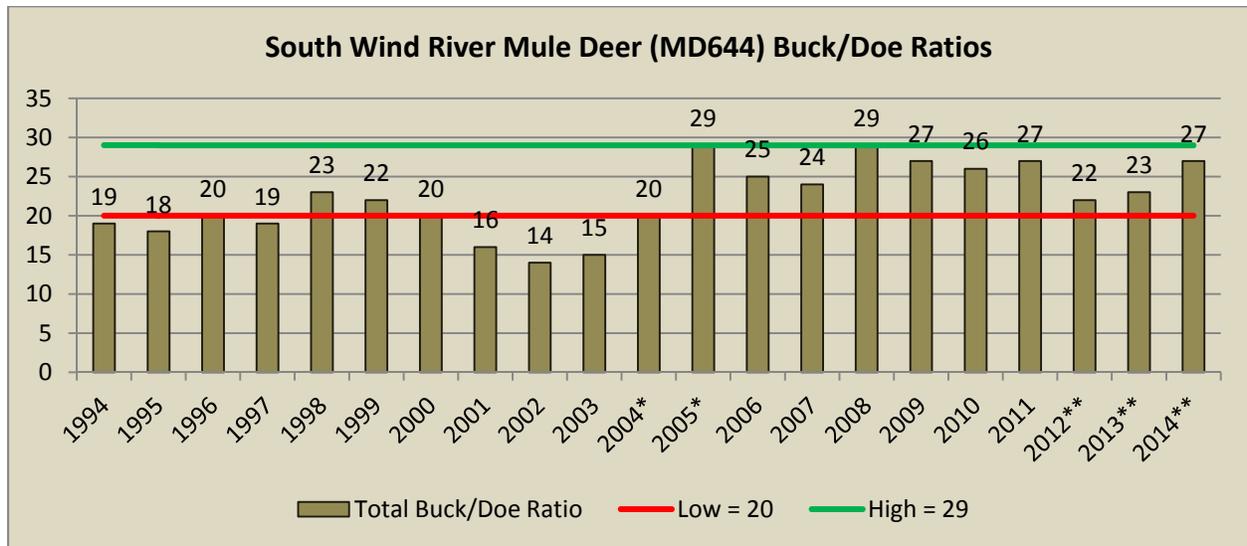


Figure 3. Buck/Doe ratios for South Wind River mule deer, 1994-2014.

Mule deer population size is managed primarily through harvesting female mule deer. It is generally accepted a minimum post-hunting season ratio of 66 fawns per 100 does is required for a herd to maintain itself when there is minimal female harvest. Annual classification surveys are conducted in late-fall. The resulting fawn/doe ratios for South Wind River mule deer averaged 67 fawns per 100 does since 1994, and 72 fawns per 100 does since 2004 (Figure 4). Yet, population growth has been interrupted or denied due to low over-winter survival, likely the result of poor habitat quality following short- and long-term drought.

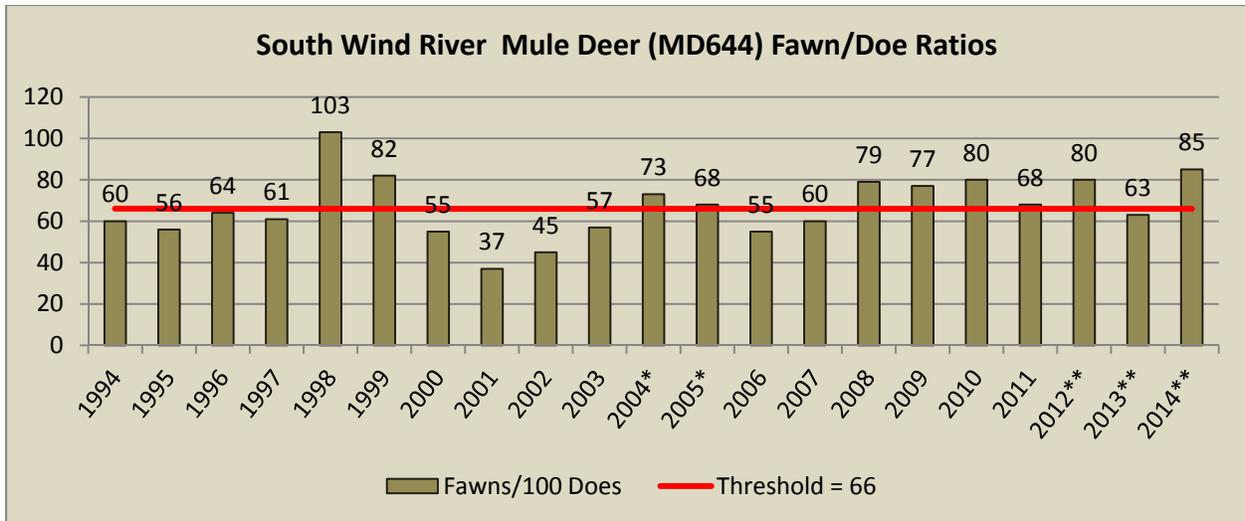


Figure 4. Fawn/Doe ratios for South Wind River mule deer, 1994-2014.

In addition to traditional classification and harvest data, the 2014 spreadsheet model estimates are anchored to an independent population estimate derived from the first sightability survey completed for this herd unit in February 2015 (Figure 5). This survey utilizes actual mule deer counts, along with snow and vegetation (hiding) cover variables to provide a correction factor for each group of mule deer observed, thereby estimating the number of deer missed in the survey. The sightability model provides a total estimate of mule deer and the standard error for the estimate. In this inaugural survey, we observed and counted 6,640 mule deer, with a sightability population estimate of 8,517 ( $\pm 208$ ). This sightability estimate used in concert with the classification and harvest data results in a post-season 2014 spreadsheet model estimate of 8,145 mule deer.

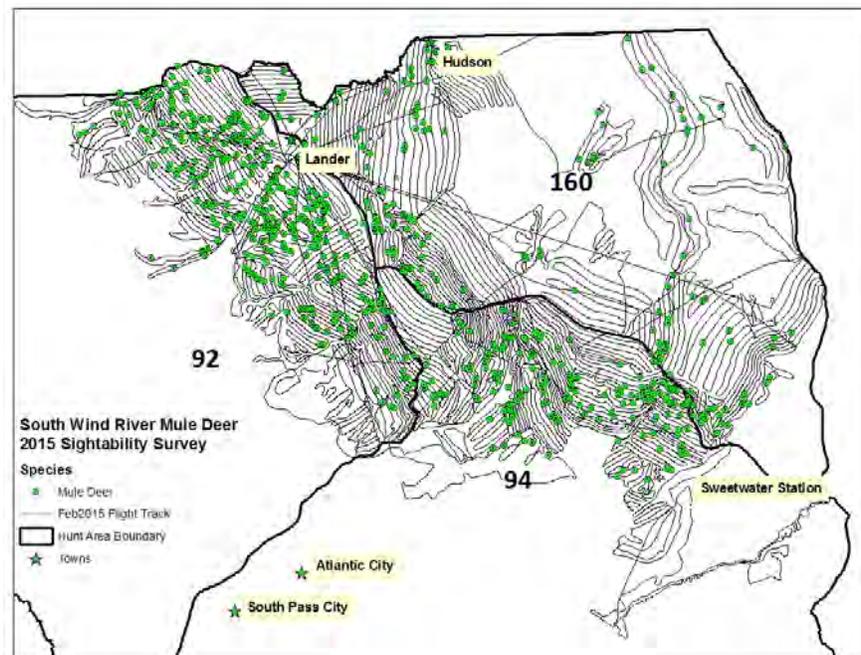


Figure 5. South Wind River mule deer sightability survey, flight track and mule deer locations

The estimates produced by the current model are about 30% below those used previously. However, the current estimates track better with the observed data, field observations, and observations from the public. Model confidence is much improved, since it is anchored to the sightability estimate. Population growth occurred from 2002 to 2008, but declined from 2009 to 2013 (Figure 6), partly due to poor fawn recruitment as a result of intense drought. Since the current model shows this population has averaged about 7,400 mule deer since 1994 and peaked at 9,800 in 2008, WGFD doesn't believe there is adequate habitat to reach or sustain more than 11,000 mule deer in this herd unit.

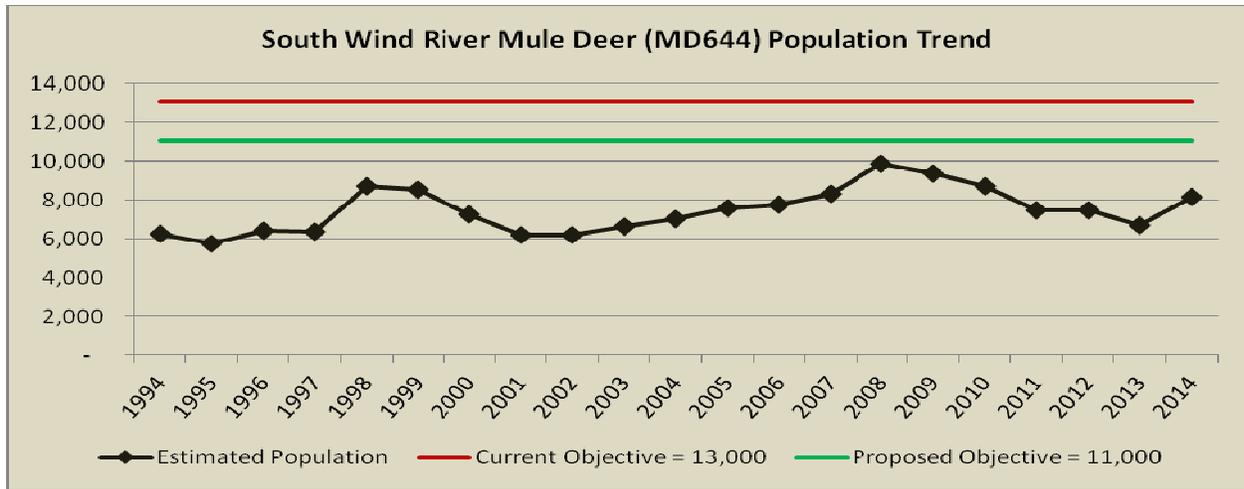


Figure 6. South Wind River mule deer population trend (1994 – 2014)

Mule deer harvest has fluctuated over the last 20 years, with hunter success closely tracking harvest (Figure 7). Antlerless harvest occurred in 10 of 21 years and was 10% of the total harvest since 1994. Harvest of does and fawns peaked in 2010 and 2011 in response to localized agricultural damage in those years and led to slightly higher hunter success in those years compared with buck harvest alone.

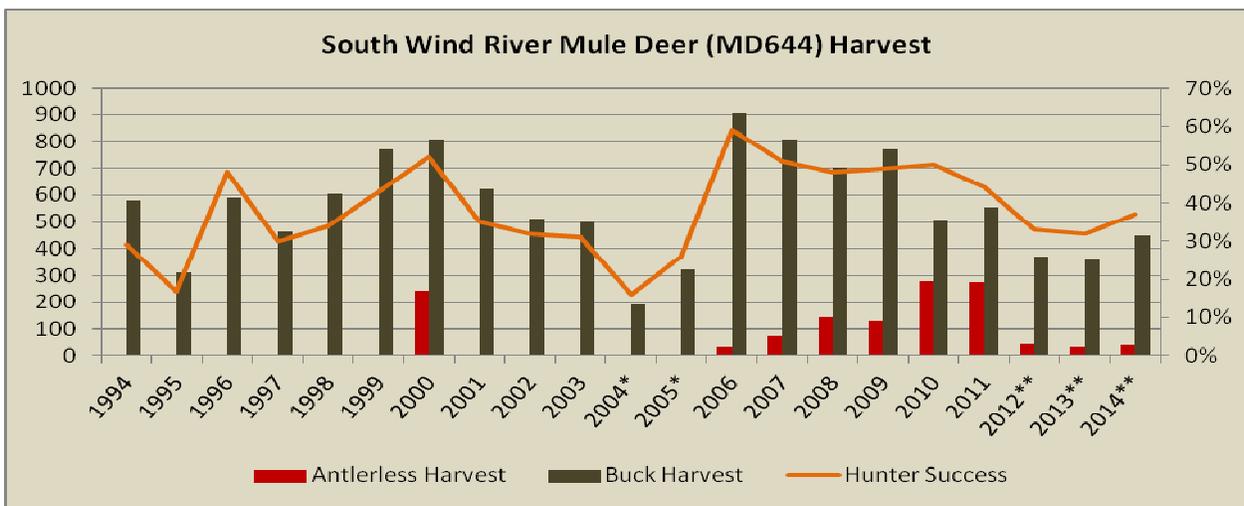


Figure 7. South Wind River mule deer harvest and hunter success (1994 – 2014)

\* = 4-point APR, \*\* = 3-point APR

Similar to harvest, the number of hunters taking the field has also fluctuated since 1994, with the greatest variability amongst resident hunters, especially in years when APRs were in place (Figure 8). While the number of hunters has fluctuated over time, there has been a general downward trend in the number of resident hunters, likely due to periods of reduced mule deer populations, lower success, and five seasons with APRs.

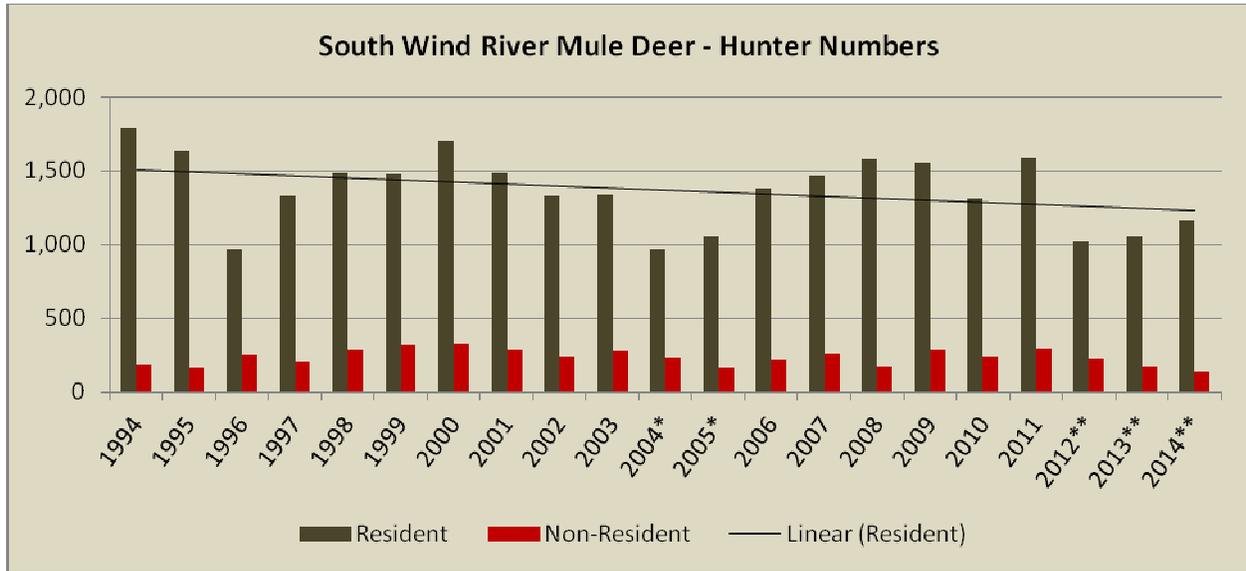


Figure 8. Number of resident and non-resident hunters for South Wind River mule deer (1994 – 2014)  
 \* = 4-point APR, \*\* = 3-point APR

Antler width class data have been collected (Figure 9) during classification surveys the past 3 years. In 2014, over 85% of the mule deer bucks were either yearlings or had Class 1 antler widths (an adult buck up to 18” wide), indicating an absence of older age-class bucks despite reduced harvest levels experienced with APRs.

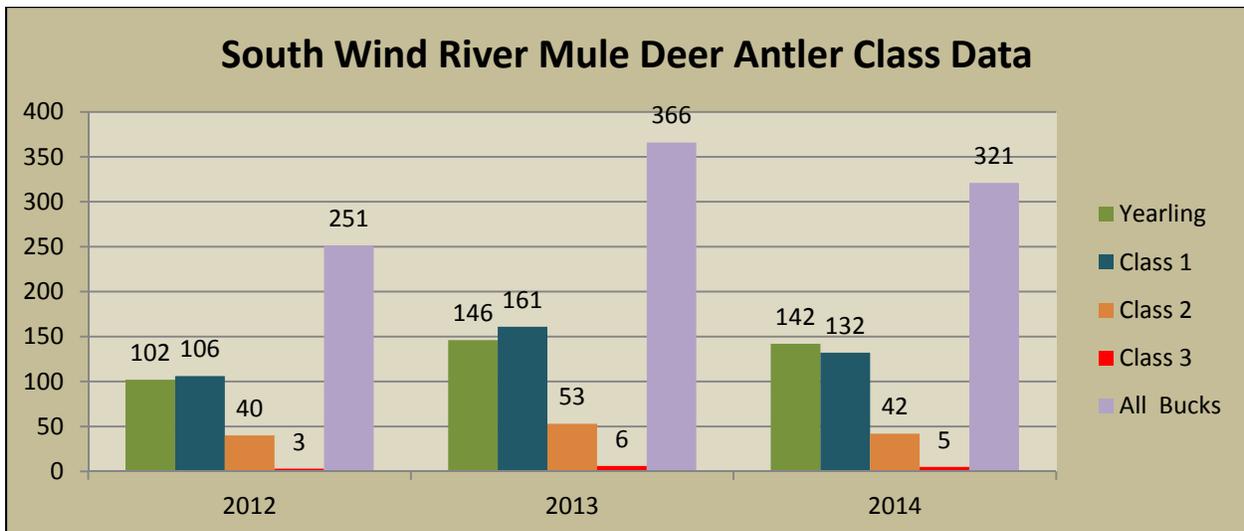


Figure 9. Antler class data from classification surveys in the South Wind River herd unit, 2012-14.

Antler width class data have been collected since 2012 during field checks and at check stations. This coincides with the 3 years of 3-point APRs in place for the South Wind River herd unit. Antler widths have not improved over the last 3 years, and the proportion of Class 1 bucks harvested has increased compared with Class 2 and Class 3 bucks (Figure 10). This mimics the trend in antler width classes observed in post-season classification surveys outlined in the previous section.

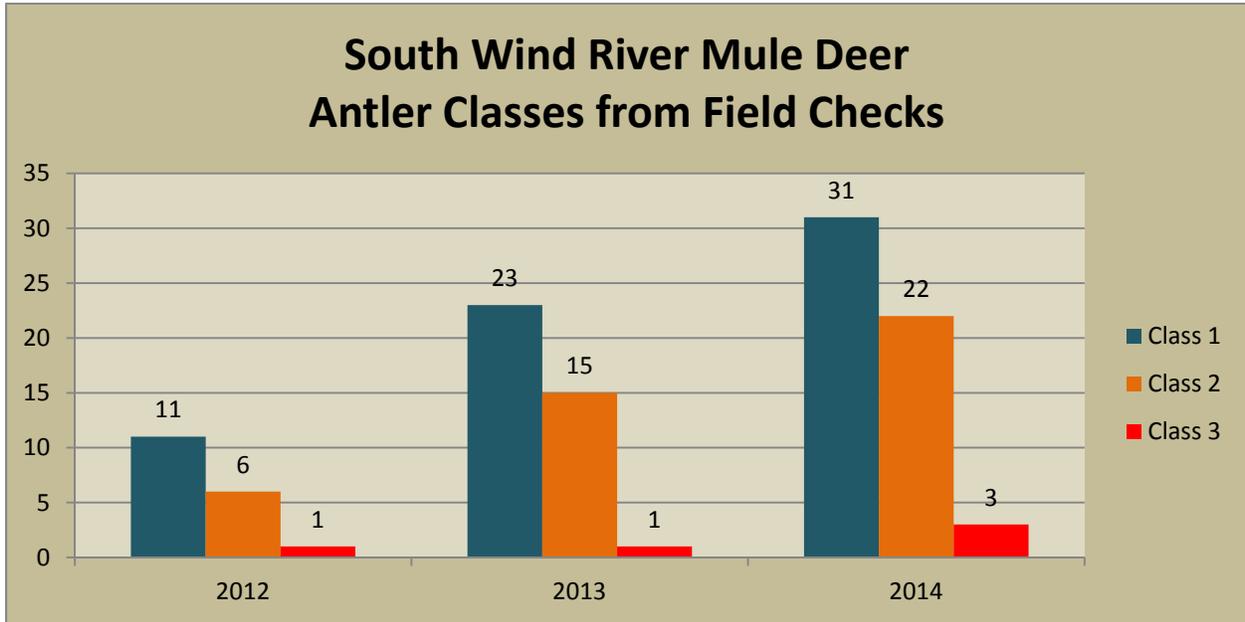


Figure 10. Antler width classes as measured during field checks and at check stations, 2012-14.

## Sweetwater Mule Deer

The Sweetwater Mule Deer (*Odocoileus hemionus*) herd unit consists of 2 hunt areas (96, 97) situated on the Sweetwater River drainage. The herd unit contains approximately 890 mi<sup>2</sup> of occupied habitat within a total area of about 1,590 mi<sup>2</sup>, with unoccupied habitats occurring primarily in the lower elevations of Hunt Area 96 and northern end of Hunt Area 97. Land within the herd unit is 79% Federal (Bureau of Land Management), 7% State Land, and 14% privately owned (Figure 11).

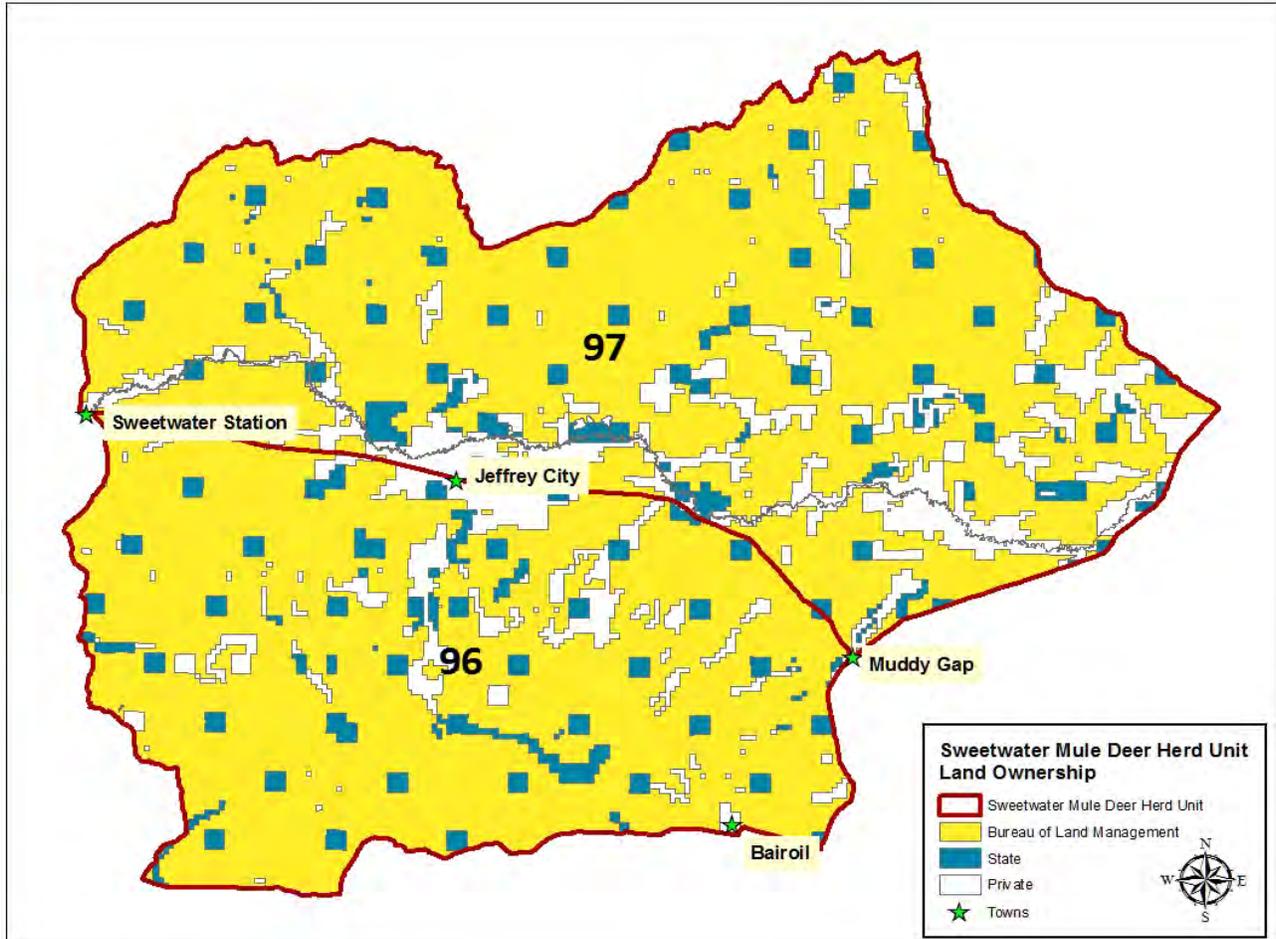


Figure 11. Land ownership in the Sweetwater herd unit.

Native browse plants important to mule deer in this herd unit include big sagebrush (*Artemisia tridentata*), antelope bitterbrush (*Purshia tridentata*), silver sagebrush (*Artemisia cana*), three-tip sagebrush (*Artemisia tripartita*), and mixed shrubs stands which include skunkbush sumac (*Rhus trilobata*), chokecherry (*Prunus virginiana*), snowberry (*Symphoricarpos albus*), with many mule deer wintering amidst irrigated hay meadows and willows (*Salix spp.*) along the Sweetwater River in Hunt Area 97. Other important vegetation types include aspen (*Populus tremuloides*), lodgepole pine (*Pinus contorta*), limber pine (*Pinus flexilis*), juniper (*Juniperus spp.*), and the various grasses and forbs associated with these vegetation types. Precipitation levels range from approximately 8 - 10 inches at lower elevations in the Arapahoe Creek drainage to nearly 24 inches at upper elevations on Green Mountain.

The current management objective for the Sweetwater Mule Deer herd unit is a post-season population of 4,500 mule deer. This herd unit is also designated for recreational management and is, therefore, managed to maximize hunter opportunity while maintaining buck ratios from 20 - 29 bucks per 100 does. The total buck/doe ratio for this herd unit has averaged 22 bucks per 100 does since 1994, and stayed within the recreational management range in all but 3 years since 2004 (Figure 12).

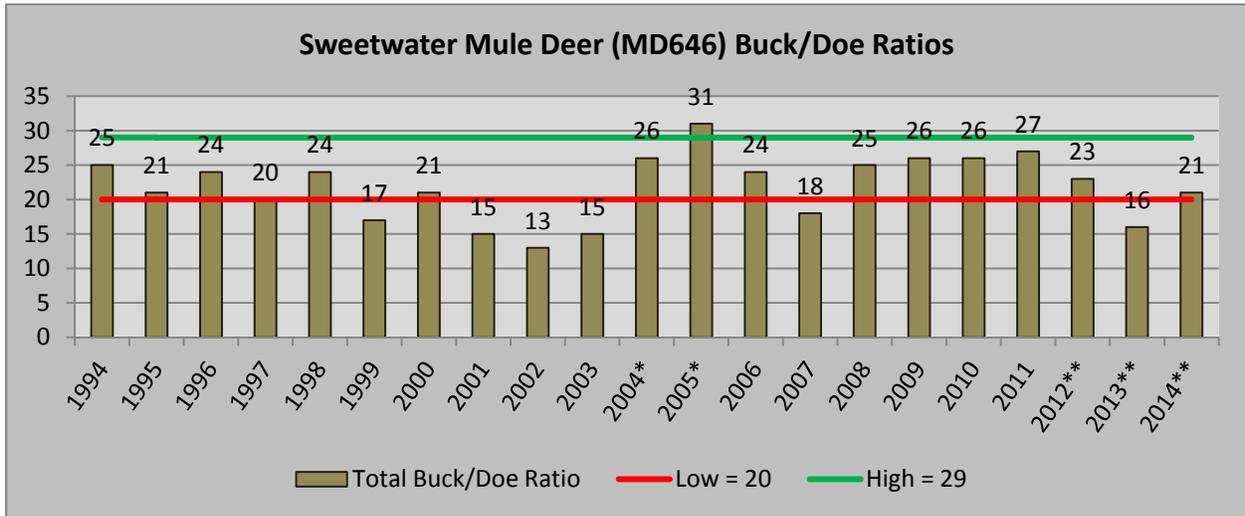


Figure 12. Buck/Doe ratios for Sweetwater mule deer, 1994-2014.

Fawn/doe ratios for this herd unit averaged 71 fawns per 100 does since 1994, and 77 fawns per 100 does since 2004 (Figure 13). Yet, population growth has been interrupted or denied due to low over-winter survival, likely the result of poor habitat quality following short- and long-term drought.

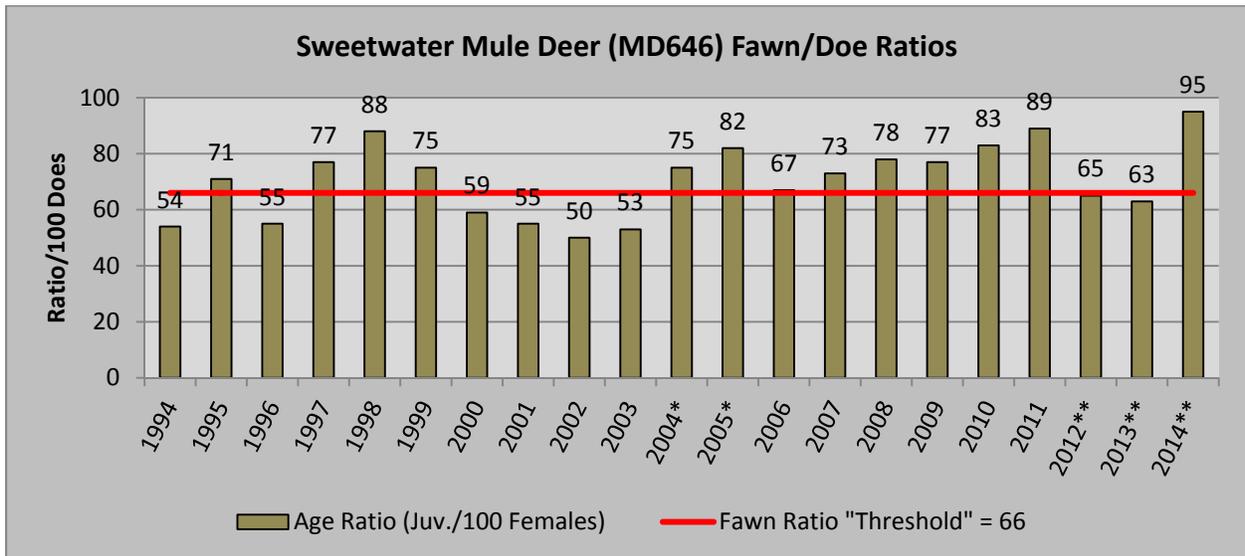


Figure 13. Fawn/Doe ratios for South Wind River mule deer, 1994-2014.

The current model appears to work well for the Sweetwater herd unit and tracks observed population fluctuations. The estimates produced by this model are about 30-40% below those used previously and are likely more accurate based on observed data, field personnel observations, and observations from the public. Population growth occurred from 2002 to 2009, but declined from 2010 to 2013, due to poor fawn recruitment as a result of intense drought (Figure 14). The current model shows this population has averaged about 3,700 mule deer since 1994 and peaked at 4,700 in 2009. We don't believe there is adequate habitat to reach or sustain more than 4,500 mule deer in this herd unit.

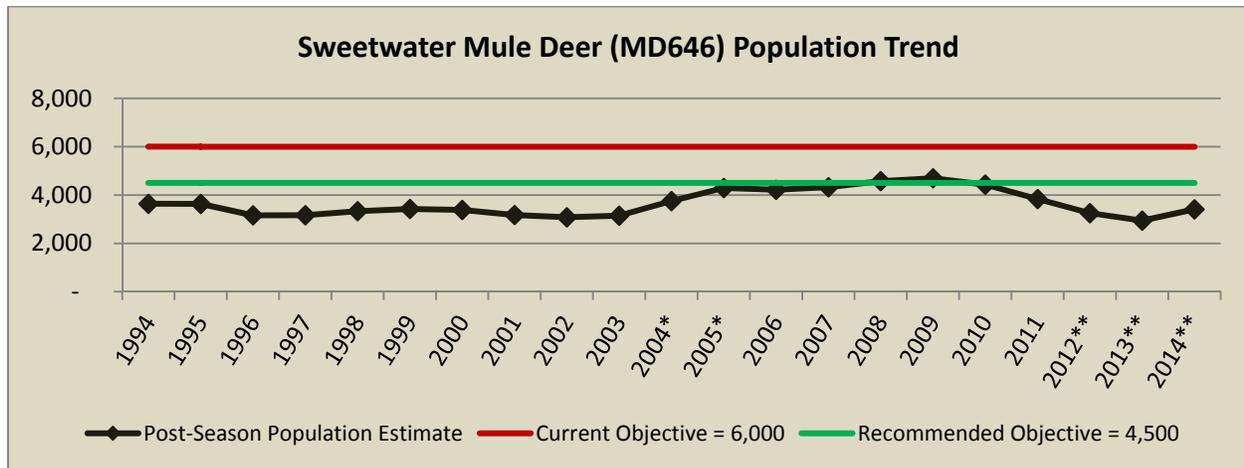


Figure 14. Sweetwater mule deer population trend (1994 – 2014)

Mule deer harvest has fluctuated widely since 1994, with hunter success tracking harvest trends (Figure 15). Antlerless harvest occurred in 10 of 21 years and was 15% of the total harvest since 1994. Harvest of does and fawns peaked in 2010 and 2011 in response to localized agricultural damage in those years and led to slightly higher hunter success in those years compared with buck harvest alone.

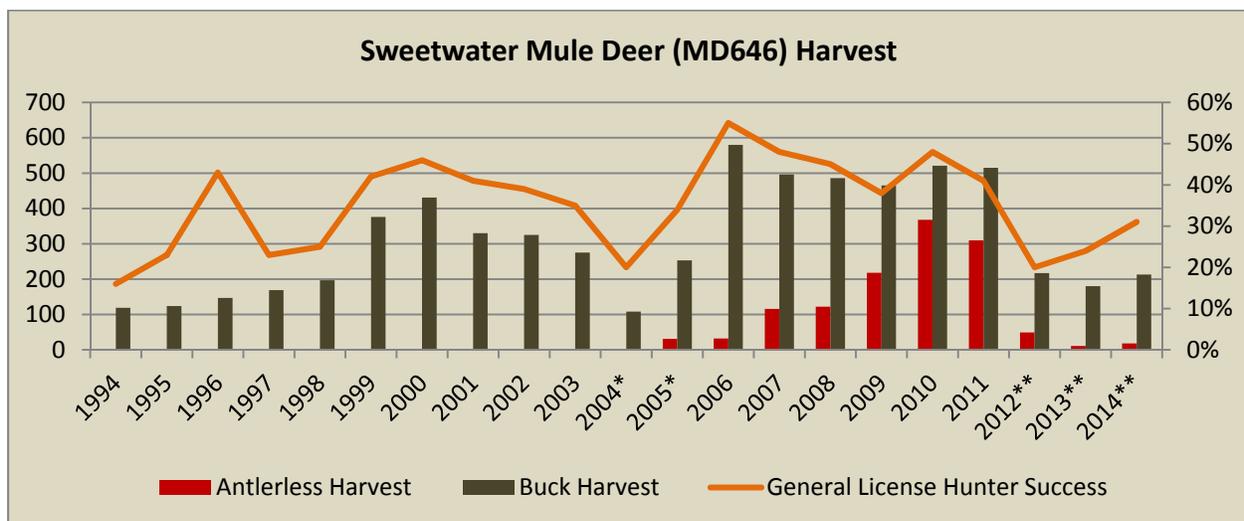


Figure 15. Sweetwater mule deer harvest and hunter success (1994 – 2014).

\* = 4-point APR, \*\* = 3-point APR

Similar to harvest, the number of hunters taking the field has also fluctuated since 1994, with the greatest variability amongst resident hunters (Figure 16), especially in years when APRs were in place. While the number of hunters has fluctuated over time due to periods of reduced mule deer populations, lower success, and five seasons with APRs, there has been an unexplainable increase in the number of hunters.

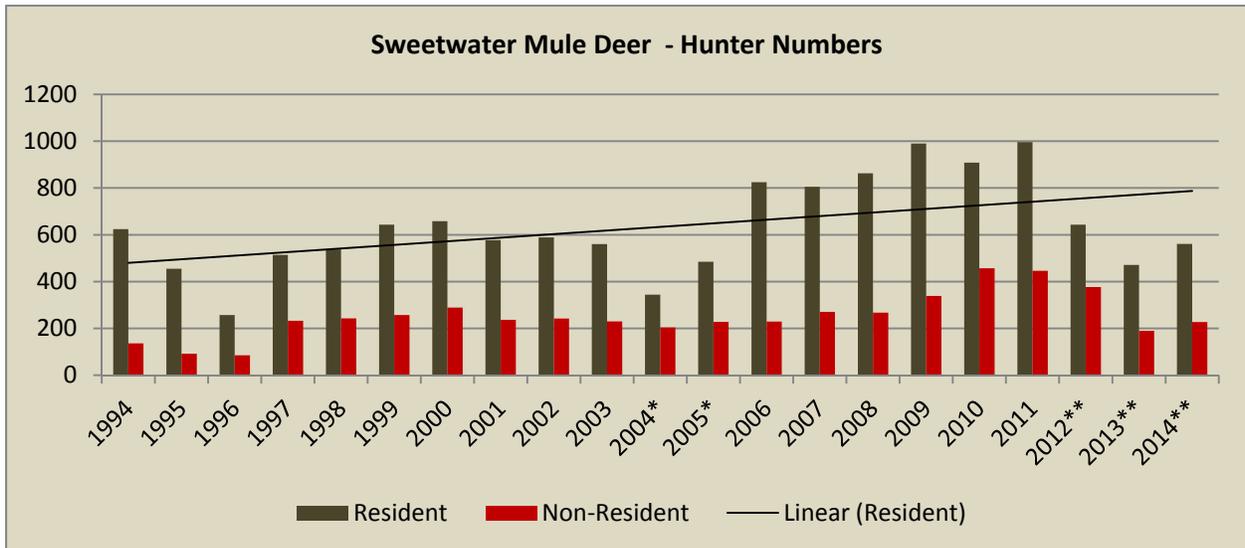


Figure 16. Number of resident and non-resident hunters for Sweetwater mule deer (1994 – 2014)  
 \* = 4-point APR, \*\* = 3-point APR

Antler width class data have been collected (Figure 17) during classification surveys the past 3 years. In 2014, nearly 90% of the mule deer bucks classified were either yearlings or have Class 1 antler widths (an adult buck up to 18” wide), indicating the absence of older age-class bucks despite reduced harvest levels experienced with APRs.

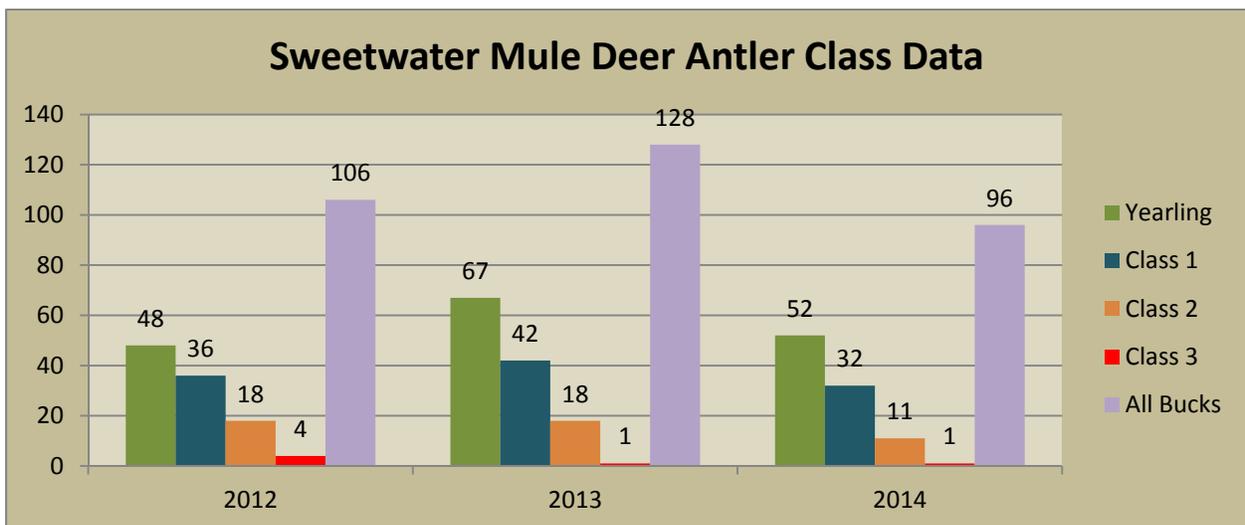


Figure 17. Antler class data from classification surveys in the Sweetwater herd unit, 2012-14.

Antler width class data have been collected since 2012 during field checks and at check stations. This coincides with the 3 years of 3-point APRs in place for the Sweetwater herd unit. Antler widths have not improved over the last 3 years, and the proportion of Class 1 bucks harvested has increased compared with Class 2 and Class 3 bucks (Figure 18). This mimics the trend in antler width classes observed in post-season classification surveys outlined in the previous section.

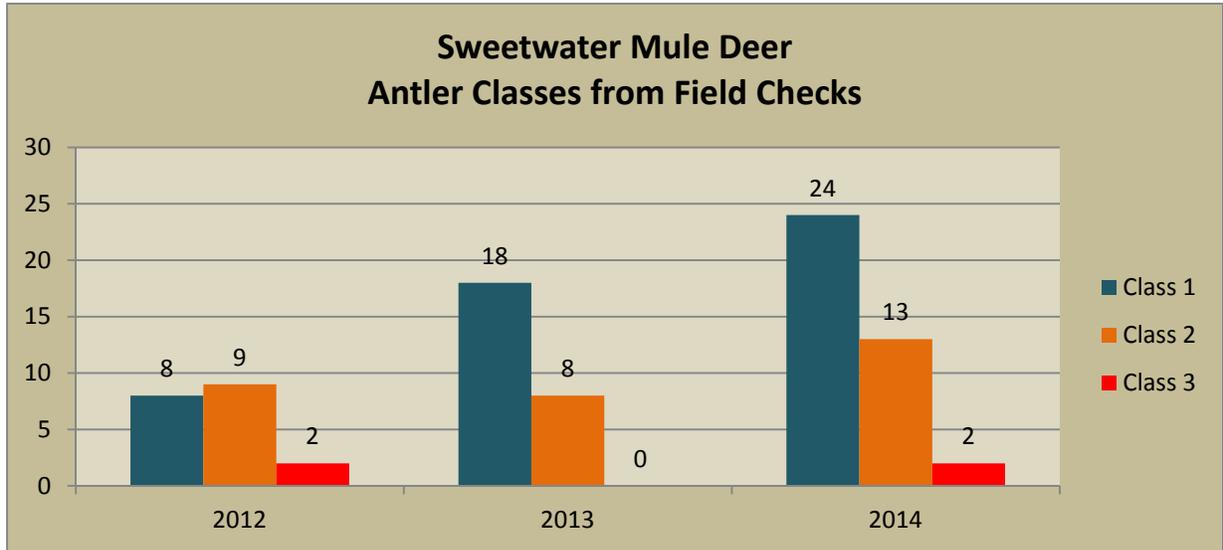


Figure 18. Antler class data as measured during field checks and at check stations, 2012-14.

# LANDER/GREEN MOUNTAIN WORKING GROUP RECOMMENDATIONS

## *Research and Monitoring*

Many problems and issues confronting mule deer management are not well understood, at least, beyond a conceptual level. Habitat conditions, natural vegetation succession, human developments, land management practices, weather and climate changes, disease, predation, competition with other wildlife species and other factors have in some combination contributed to the decline in mule deer in the South Wind River and Sweetwater herd units. Through monitoring and field studies, managers are improving their understanding of how mule deer are being affected. This knowledge will assist designing more effective management and mitigation measures. Managers also need to be sure the management practices currently recommended and those considered in the future are effective. Accordingly, research is being done throughout mule deer range to document whether management practices are producing desired results.

Mule deer distribution, habitat use, nutritional status, and movement patterns are studied so management is focused where it is most needed. Related research seeks to identify the specific environmental factors limiting the size and health of the South Wind River and Sweetwater mule deer populations. This information will enable managers to better predict whether a proposed development is likely to have a significant impact at the population level, and provides a basis to select the most effective locations for habitat treatments or mitigation projects. Ultimately, sound management decisions must be founded in good science. Research is an essential component of any progressive management program.

**Objective: Improve our understanding of mule deer ecology and movement patterns and utilize this gained knowledge to affect management responses.**

*Strategy: Secure an adequate budget and outside support to fund the identified research/monitoring needs for the South Wind River and Sweetwater herd units.*

*Strategy: Design and implement a mule deer movement study in the South Wind River herd unit to document movement timing, migration routes and corridors used, and “stopover sites” and other important habitats used during migration.*

*Strategy: Identify “stop-over areas” during annual spring and fall migration and assess plant phenology and key plant selection by mule deer.*

*Strategy: Assess pre- and post-winter nutritional condition (i.e. fat reserves) of adult females and late winter fetal rates with ultrasonography and fall recruitment rates prior to annual herd composition surveys.*

*Strategy: Evaluate shifts in distribution and habitat use as a result of competition with elk, white-tailed deer, wild/feral horses, and pronghorn.*

*Strategy: Identify habitat characteristics at parturition sites to assess fawn survival and recruitment.*

*Strategy: In areas where predators may be having a significant impact on mule deer populations, assess how predation may influence mule deer survival and age/sex composition of the population.*

*Strategy: Evaluate or monitor the prevalence, transmission, and spread of diseases such as chronic wasting disease (CWD) and epizootic hemorrhagic disease (EHD).*

*Strategy: Evaluate and monitor the effect of highway vehicle collisions and techniques to minimize them.*

**Objective: Improve our knowledge of how various vegetation management techniques affect mule deer and their habitat.**

*Strategy: Evaluate vegetation and mule deer response to various applications of prescribed fire and other treatment techniques in sagebrush steppe, mountain shrub, aspen, conifer and riparian habitats.*

## *Adaptive Management*

As mule deer populations have fluctuated over the past 40+ years, hunters have increasingly asked for Wyoming Game and Fish Department (WGFD) to become more proactive with immediate response to unforeseen changes in mule deer numbers (e.g., increased mortality due to winter or disease) and habitat conditions (e.g., drought or extraordinary winter conditions). While WGFD has a well-defined and established season setting process, the ability for them to respond rapidly to unforeseen change is less defined.

WGFD's season setting and population management processes need to be evaluated to allow increased flexibility to adjust hunter numbers and harvest following weather events or other conditions which result in drastic reductions in mule deer numbers.

**Objective: Review the status of the South Wind River and Sweetwater herd units and adjust management of hunting seasons and populations based on sound and scientific research and management data.**

*Strategy: Consider variable carrying capacity, along with short- and long-term weather/climate patterns during population objective reviews and annual season setting process.*

*Strategy: Retain the ability to implement antlerless harvest in response to private land damage concerns, as well as condition of habitats and consideration of short-term carrying capacity.*

*Strategy: Establish a timeline and process for review of the Working Group's recommendations, along with baseline criteria to evaluate successes.*

*Strategy: After a period of three years of limited quota seasons (2016 – 2018) evaluate whether limited quota should be retained or if other season structures are more appropriate based on the population size objective for each herd unit and the recreation management criteria for buck/ doe ratios.*

*Strategy: When necessary employ the "Emergency" regulation process to address unforeseen mule deer population declines to appropriately adjust hunting season construct (i.e., license numbers, etc.).*

## *Hunting Season Structure*

Hunting seasons have been the subject of growing concern for hunters in the South Wind River and Sweetwater herd units for more than a decade. General license hunting for antlered mule deer has been the tradition since 1971. Season length has varied from 6 days to 17 days, with 8 day seasons opening on October 15 being standard since 1994, with an additional day added twice to close the season on a Sunday. Antler point restrictions (APRs) have been implemented on 3 occasions since 1971 (4-point APR in 1974 and 2004-05; 3-point APR 2012-14) to reduce buck mule deer harvest, reduce hunter crowding, and/or to build buck/doe ratios. All hunt areas in the South Wind River (92, 94, 160) and Sweetwater (96, 97) herd units are included in Non-resident General License Region E, with those licenses also valid in Hunt Areas 88, 98, 128, 148, and 171. Although the number of non-residents is limited for Region E (800 licenses from 1996-2012, and 600 from 2013-15), some locations have experienced higher percentages of non-resident hunters than would occur in limited quota draw areas (20% NR/80% Resident). One example is Green Mountain in Hunt Area 96, where annual harvest surveys have shown up to 44% of the hunters being non-residents. In contrast, Hunt Area 92 near Lander has averaged 16% non-resident hunters since 1994 and only reached or exceeded 20% non-residents 4 times in that period (maximum was 25% in 1996).

Antlerless mule deer hunting has been typically restricted, with the most liberal seasons (any deer plus doe/fawn licenses) occurring in the late-1980s and early-1990s, and more restrictive doe/fawn seasons in the late-2000s. Antlerless mule deer harvest for population stabilization/management was needed from 1988 – 1992, as population growth in the late 1980s placed the number of mule deer at or over objective at that time. Following the winter die-off of 1992-93, the objective was raised in 1994, supplanting the need for antlerless harvest. Mule deer numbers again grew until 1998 and 1999, when the population again reached objective levels, and management called for antlerless harvest to maintain the population at objective. In 2008, mule deer populations were growing enough to prompt concerns about increased damage to hayfields on privately owned lands, and were moving toward objective. Between 2008 and 2011 doe/fawn licenses were issued primarily to minimize damage concerns, but also to curb population growth due to concerns about habitat and carrying capacity as populations grew toward objective. Recently, archery and youth hunters have been allowed to harvest “any deer” in hunt areas otherwise restricted to antlered mule deer or with APRs for mule deer.

As white-tailed deer numbers grew in the Lander and Sweetwater River areas, General License hunting season structure was changed from antlered deer to “antlered mule deer or any white-tailed deer” in the late-1990s. Additional focus on white-tailed deer harvest began with “white-tailed deer only” licenses being offered as early as 2000 in Hunt Area 97 and 2012 in the South Wind River herd unit.

Mule deer populations in both herd units have experienced wide fluctuations due to annual or periodic weather events/habitat factors, along with overall degrading habitat conditions due to long-term drought. Hunters have increasingly expressed concerns about fewer mule deer, along with fewer and lower “quality” bucks. This has been accompanied by complaints about hunter crowding/too many hunters regardless of location, more ATVs, and increased abuse of off road travel regardless of vehicle type, too many non-residents, too much doe harvest, requests for limited quota or closing mule deer hunting, and overall concern about mule deer population health and numbers and hunting quality.

While both herds are managed for “recreational opportunity” (20-29 bucks per 100 does), many hunters are increasingly interested in restricting such opportunity in order to provide improved quality to their hunting experience and satisfy their desire for increased mule deer numbers and buck quality. This sentiment has been expressed in public season setting meetings for many years, but has increased in intensity over the past few years during field contacts and at check stations during hunting seasons, at December and spring public season setting meetings, as well as throughout the year during most public contacts regarding mule deer.

The Lander/Green Mountain Mule Deer Working Group was convened largely due to the concerns outlined above, and has carefully considered alternatives to or continuing with the current hunting season structure, which is principally based around General License deer hunting seasons. Discussions about potential changes to hunting season structure were held over the course of several meetings. Ultimately, the Working Group believes some change is prudent to address two primary issues initially identified at the Lander/Green Mountain Mule Deer Workshop in April 2014 – Future hunting seasons should “Balance Hunting Opportunity with Reduced Hunter Crowding”. The intent is to not reduce hunting opportunity so much that only a few hunters get to hunt with the sole purpose of eliminating crowding.

The group considered several options including:

1. The “Resident Region” concept by which residents and non-residents would be required to choose a region in Wyoming where they could hunt with general deer licenses but not hunt elsewhere in the state;
2. Keep general license hunts with changes to opening dates;
3. Split general and limited quota seasons;
4. Single limited quota seasons by individual hunt area or grouped hunt areas, and
5. Split limited quota seasons by individual hunt area or grouped hunt areas.

**Objective: Minimize the extent to which competing ungulates impact mule deer populations.**

*Strategy: Continuing to provide liberal seasons specifically for white-tailed deer to reduce or minimize competition with mule deer.*

**Objective: Balance Hunting Opportunity with Reduced Hunter Crowding**

*Strategy: Implement a split limited quota season in both the South Wind River and Sweetwater herd units (Table 2).*

*Strategy: Attempt to provide license numbers that are at least commensurate with average general license mule deer hunter numbers in these herd units from 2012 – 2014.*

*Strategy: Adjust season dates so as to not directly impact hunters for other species.*

*Strategy: Group license quotas by herd unit, with Hunt Areas 92, 94, and 160 combined for one set of split seasons, and Hunt Areas 96 and 97 being combined with unique season dates.*

*Strategy: Implement a Type 9 archery only license for all 5 hunt areas.*

*Strategy: Continue General License seasons for youth hunters in each herd unit.*

*Table 2. Split Limited Quota Seasons (Separated by Herd Unit) with Combined Type 9 Archery Only Hunt. Red text indicates proposed “new or expanded” season structure. Black text keeps season structure similar to existing.*

<b>South Wind River Herd Unit</b>					
<b>92, 94, 160</b>	GEN	Oct. 1	Oct. 25		General youth license, any deer
	Type 1	Oct. 1	Oct. 14	Quota set annually	Antlered mule deer or any white-tailed deer
	Type 2	Oct. 15	Oct. 25	Quota set annually	Antlered mule deer or any white-tailed deer
	Type 3	Oct. 1	Nov. 30	Quota set annually	Any white-tailed deer
	Type 8	Oct. 1	Nov. 30	Quota set annually	Doe or fawn white-tailed deer
<b>Sweetwater Herd Unit</b>					
<b>96, 97</b>	GEN	Oct. 15	Oct. 31		General youth license, any deer
	Type 1	Oct. 15	Oct. 22	Quota set annually	Antlered mule deer or any white-tailed deer
	Type 2	Oct. 23	Oct. 31	Quota set annually	Antlered mule deer or any white-tailed deer
	Type 3	Oct. 15	Nov. 30	Quota set annually	Any white-tailed deer
	Type 8	Oct. 15	Nov. 30	Quota set annually	Doe or fawn white-tailed deer
<b>92, 94, 96, 97, 160</b>	Type 9	Sept. 1	Sept. 30		Antlered mule deer or any white-tailed deer

**Objective: Limit unneeded and unregulated doe/fawn harvest**

*Strategy: Due to concerns about doe mule deer harvest while populations are well below objective, youth and archery hunters should be restricted to “antlered mule deer or any white-tailed deer”.*

*Strategy: Continue to allow doe/fawn harvest as is necessary and appropriate via Type 6 and Type 7 licenses.*

**Objective: Ensure those who choose to archery hunt are properly educated to best ensure safety and ethical behavior similar to those who hunt with a rifle.**

*Strategy: Make the Bowhunter Education course a statutory requirement for all archery hunters to educate archery hunters on archery basics and safety and animal identification. This will encourage more planning for hunts, reduce wounding losses during archery seasons, increase respect for others during archery season, and possibly reduce hunters using archery season as “scouting” for “rifle” season(s).*

## *Habitat Management*

While multiple factors have likely caused the decline of mule deer in the South Wind River and Sweetwater herd units and throughout the Wyoming over the last twenty-five years, habitat quality and availability have likely had a significant influence. Several important mule deer habitats such as aspen, mixed mountain shrub, and sagebrush steppe are in declining condition as a result of persistent drought, changing plant community structure (succession), noxious and invasive species, and fire suppression.

Though landscape-scale protection, restoration, and management of mule deer habitats will be needed to sustain mule deer herds at desired levels, the abundance of wildlife and wildlife habitats throughout both these herd units has and will continue to be the result of progressive land management and stewardship by private landowners, agriculture producers, state and federal land management agencies, and others. It is important all land managers, whether on public or private land, continue to play a role in protecting and providing wildlife habitat.

Historically, Wyoming Game and Fish Department (WGFD) has placed highest priority on managing winter ranges used by mule deer and other ungulates based on the assumption these habitats are most limiting to population growth. Nutrition during summer and autumn has an important influence on survival and especially reproduction (Julander et al. 1961, Julander 1962, Pederson and Harper 1978). Recent research has established that nutrition during summer and fall periods is critically important for mule deer fawn production and survival (Tollefson et al. 2010, Monteith et al. 2013). The body condition of does moving from fall or “transition” ranges (habitats at mid-elevation mule deer move through or stop over in during fall and spring migration) onto winter range significantly influences fawn survival and recruitment the following year (Bishop et al. 2005, Tollefson et al. 2010). There is also growing evidence improving forage quality on late summer and fall transition range can enhance a population’s growth potential by increasing pregnancy rates and overwinter survival of fawns and adults (Lomas and Bender 2007, Bishop et al. 2008). Sawyer et al. (2009b) demonstrated mule deer use stopover sites as they migrate between summer and winter ranges. Deer spend more time at these sites presumably to forage and conserve energy as they progress to winter range. In light of this insight, the Working Group is focusing emphasis on summer and transition ranges to increase fawn production and survival. Habitat work in these areas may produce the greatest net benefit for deer. The Working Group also recognizes continued habitat work on winter ranges where it has potential to reduce over-winter mortality is important.

It is generally accepted quality mule deer habitat includes a mix of early- and mid-succession plant communities, especially those containing higher proportions of preferred browse species. Natural disturbance regimes, including periodic fire, are essential to maintain vegetation in a range of successional stages beneficial to mule deer. In addition, mule deer must also be able to use their seasonal habitats effectively. Because migration corridors serve as the critical link between summer and winter ranges, they must be unimpeded by physical barriers (e.g., game-proof fences, roads, etc.) and protected from various forms of development and human disturbance (e.g., housing and energy development).

Most habitat treatments are intended to replicate natural disturbance events through such actions as prescribed burning, mowing, chaining, discing, thinning, and selective application of herbicides. Treatments typically target older plant communities that are less productive and of lower nutritional value. Other treatments seek to control invasive species such as cheatgrass or to restore converted rangelands through seeding and cultivation. To be most effective, habitat treatments should focus on those seasonal habitats and locations having the greatest potential to influence mule deer survival and reproductive success. In general, the nutritional plane of mule deer entering the winter has the greatest influence on their survival through winter and spring, and also has a major effect on health and survival of fawns (Tollefson et al. 2010, Montieth et. al. 2013b).

Funding and planning resources to implement habitat projects are limited. Ideally, available resources should be invested in habitats and locations where the greatest benefits will be realized. Accordingly, emphasis should be placed on important (or historically important) summer/fall transition ranges where there is high potential for successful restoration and improvement. However, opportunities to implement habitat projects are often dependent on local area interest, partnerships, and funding availability. The momentum realized from local efforts may evolve into broader initiatives yielding additional resources that can be channeled into identified statewide priorities.

**Objective: Implement vegetation management practices and treatments to enhance and or protect mule deer habitat on a landscape scale, while considering ecological and economic effects and impacts on other species.**

*Strategy: Utilize the WGFD's "Recommendations for Managing Mule Deer Habitat in Wyoming" when designing habitat improvement projects.*

*Strategy: Review and update the South Wind River Mule Deer Herd Habitat Management Plan.*

*Strategy: Based on the habitat management plans, research, and monitoring for the South Wind River and Sweetwater herd units, design and implement treatments to maintain healthy and productive mule deer seasonal ranges. Especially focus on late-summer and transition habitats.*

*Strategy: Seek to provide long-term protection of important mule deer habitats through land acquisitions, conservation easements, cooperative agreements and land-use management plans.*

*Strategy: Work cooperatively with land management agencies to develop fire management plans/policies that, under appropriate conditions, allow natural ignition wildfires to burn when they will benefit mule deer.*

*Strategy: Actively encourage timber management activities designed to maintain and improve mule deer habitat, specifically including clear-cuts, stand thinning and aspen and cottonwood enhancement.*

**Objective: Improve habitats in crucial areas as determined by movement research.**

*Strategy: Conduct mule deer movement and habitat use studies to refine and improve our knowledge of important migratory routes, corridors, and habitats. Use this information in the development of habitat management plans.*

*Strategy: Develop habitat management plans for both the Sweetwater and South Wind River herd units.*

*Strategy: As new information becomes available from the studies and monitoring (i.e., collaring/movement research) adapt plans accordingly.*

*Strategy: Collaborate with other agencies and land managers to develop and implement habitat management plans.*

**Objective: Reduce spread of noxious and invasive species to improve habitat.**

*Strategy: Map areas where non-native invasive plants threaten mule deer habitat in the Sweetwater and South Wind River herd units. Evaluate the risk of invasive species establishment in mule deer habitats.*

*Strategy: Aggressively treat non-native invasive plants using chemical, mechanical, biological, and grazing techniques.*

*Strategy: Use multi-agency partnerships, including County Weed and Pest Districts, to develop coordinated approaches to identify and prioritize cheatgrass infestations and fund and implement control programs.*

*Strategy: Seek legislation to list cheatgrass as a noxious weed.*

*Strategy: Encourage the legislature, non-governmental organizations, and other federal agencies to promote and secure sufficient funding to manage and control invasive species and assist private landowners.*

*Strategy: Support research to develop new and effective methods to control cheatgrass and other invasive species.*

*Strategy: Inform the public on the invasive plant species and measures they can take to reduce their spread.*

**Objective: Improve our knowledge of how vegetation management affects mule deer and other species.**

*Strategy: Design monitoring to better understand changes in vegetation communities as a result of management actions and how mule deer and other herbivores use those communities.*

*Strategy: When habitat treatments are planned in mule deer habitats such as shrub-dominated winter and transitional ranges and aspen communities, but the treatments are intended primarily to benefit other species, proponents should evaluate short and long-term effects on mule deer before treatments are implemented.*

*Strategy: Where other herbivores contribute to excessive forage utilization, advocate appropriate management actions to ensure sustainable utilization levels.*

*Strategy: Habitat management plans designed primarily to benefit mule deer should include a detailed analysis of the effects treatments may have on other species.*

**Objective: Avoid or minimize impacts to mule deer migration routes and remove existing barriers to mule deer movement.**

*Strategy: Work closely with the Wyoming Department of Transportation (WYDOT), county road departments, irrigation districts, railroads, energy companies, and other entities to design projects that minimize barriers to migrating mule deer and to incorporate features (e.g., over- and underpasses, right-of-way (ROW) fences, project layout, etc.) that restore or improve migration over/through existing roads, highways, ditches, and other projects.*

*Strategy: Encourage WYDOT and county road departments to seed less palatable vegetation in highway rights-of-way to reduce vehicle/deer collisions.*

*Strategy: Encourage WYDOT and county road departments to mow rights-of-way as far off the roadway as possible to enable motorists to see wildlife.*

*Strategy: Recommend fence designs that are compatible with deer passage and minimize entanglements. Provide fencing configuration guidelines most suitable to mule deer movement to land management agencies, private landowners, WYDOT and others.*

*Strategy: Collaborate with housing developers, housing associations, and County Commissions to avoid fence construction to the greatest extent possible. Where fences are necessary construct or modify existing fences most suitable to mule deer movement and that minimize entanglement.*

*Strategy: Work with the Natural Resource Conservation Service (NRCS), conservation districts, land management agencies, landowners, and others to identify and modify or remove existing fences and other barriers that impede or stop mule deer movement. Utilize volunteers to implement fence removal projects.*

*Strategy: Continue to identify migration corridors throughout the South Wind River and Sweetwater herd units and assess risks to these migration routes, and develop solutions to potential conflicts.*

**Objective: Form partnerships with Bureau of Land Management (BLM), U.S. Forest Service (USFS), Natural Resource Conservation Service (NRCS), private landowners, and non-governmental organizations.**

*Strategy: Work cooperatively with land management agencies to implement monitoring programs that will detect and document potential decline or conversion of important habitats, especially on winter, summer and transitional ranges, and take appropriate action to avoid, minimize, or mitigate the impact.*

*Strategy: Work cooperatively with private landowners (ranchers/farmers) to provide technical and financial assistance to enhance mule deer habitat.*

*Strategy: Work with land management agencies and private landowners to incorporate deer habitat monitoring in their programs.*

*Strategy: Inquire and coordinate with the NRCS to develop a Mule Deer Initiative similar to their sage-grouse and black-footed ferret initiatives, to leverage federal money to implement mule deer habitat improvement projects.*

*Strategy: Work with non-governmental organizations (NGOs) such as the Muley Fanatic Foundation, Mule Deer Foundation, and others to fund and implement needed research, monitoring, and project implementation.*

**Objective: Consider the impacts other species have on the landscape and on mule deer and their habitats.**

*Strategy: Continue monitoring vegetation conditions in key mule deer habitats.*

*Strategy: Establish new vegetation transects in all seasonal ranges to monitor important habitats. At a minimum, data should include forage utilization measured in spring and productivity measured in fall.*

*Strategy: Inform land management agencies when data indicate habitats are in poor condition. Encourage changes in habitat management to restore habitats in poor condition.*

*Strategy: Evaluate herd management objectives (i.e., population size) and, as appropriate, adjust them in balance with habitat condition and availability.*

## *Education and Public Outreach*

By any measure (social, cultural, economic, or ecological), mule deer are among the most valued of Wyoming's natural resources. To many, the species is a quintessential symbol of the open western landscape. Mule deer are also among the West's most popular big game species, sought by resident and nonresident hunters alike. Historically, WGFD sold far more deer hunting licenses than licenses to hunt any other species. As a result, the sale of deer licenses brought more revenue to WGFD than was generated by any other species.

It is often difficult to gauge social preferences regarding mule deer management because at any given time managers are more likely to hear from constituents who are dissatisfied and want some aspect of management changed, while those who are satisfied with the status quo tend to be less vigorous in expressing their support. Some of the more common issues include complaints about: hunter densities; numbers of mule deer; numbers of bucks; availability of large bucks; harvest success; hunting access; habitat conditions; and excessive ATV use. To objectively evaluate viewpoints on these and other issues, WGFD periodically conducts a survey of licensed deer hunters' attitudes and opinions toward deer management in Wyoming (Responsive Management 2006, 2012).

**Objective: Ascertain the public's current knowledge and awareness of important issues affecting mule deer management in the South Wind River and Sweetwater herd units. Understand the public's opinions and expectations regarding mule deer management and hunting in these herd units.**

*Strategy: Periodically conduct public opinion studies specific to the South Wind River and Sweetwater herd units to gauge the overall preferences of affected interests as management plans are being developed and implemented. Studies should be designed to assess hunter knowledge and awareness, opinions, and desires relating to mule deer management in these herd units.*

*Strategy: Conduct a 3-year follow up survey to evaluate hunting season structure changes (i.e., limited quota season structure) in the South Wind River and Sweetwater herd units to assess hunter attitudes and satisfaction.*

*Strategy: Conduct a hunter crowding survey to assess the perception of hunter crowding in the South Wind River and Sweetwater herd units.*

**Objective: Actively involve the public in management decisions.**

*Strategy: Maintain the Working Group as a functional citizen based working group that WGFD can use to continue to assess management progress in the South Wind River and Sweetwater herd units.*

*Strategy: Continue to utilize "Collaborative Learning" to involve all stakeholders including the Working Group when addressing issues related to mule deer and their management and when developing management strategies for the South Wind River and Sweetwater herd units.*

**Objective: Increase information available via written media (i.e., news releases, social media, website, articles, and brochures) and/or through direct public contact to engage hunters and other mule deer advocates on issues affecting mule deer populations in the Lander/Green Mountain areas.**

*Strategy: Provide a public presentation/workshop to provide information to all interested individuals on mule deer biology and WGFD management processes.*

**Desired information shared:**

- 1. Species information for mule deer and white-tailed deer, including appearance, size, coloration, antler structure, basic biology and habitat use.*
- 2. Age classification for mule deer—how to tell the differences between immature and mature mule deer and why it's important.*
- 3. How to combat the public perception “WGFD have already made up their mind” on seasons- Provide information delineating in detail the process it takes to set seasons.*
- 4. Increase wildlife population and hunting season setting process information into Hunter Education courses.*
- 5. Management process—the entire process from start to finish including survey information, management models utilized, public participation, damage control on private property, commission involvement etc. and how it all ties together to become the proposed season for an area.*

**Discussion topics include:**

*APRs, habitat and carrying capacity, recreational vs. special management direction, limited quota vs. general seasons, and anything else needed to increase public understanding of how these factor into population management and hunting season structure decisions.*

- 6. Address the misconception that hunting/harvest is bad for mule deer.*

*Strategy: Disseminate information about mule deer management in the South Wind River and Sweetwater herd units through brochures and reports, via WGFD website and social media updates, during routine public contacts, and public forums including routine public season setting and information gathering meetings.*

*Strategy: Emphasize the value of hunter participation in harvest surveys, check stations, and hunter satisfaction surveys.*

**Objective: Establish a timeline and process for review of the Working Groups' recommendations.**

*Strategy: Reconvene the Working Group annually to discuss what has been accomplished or needs to be addressed.*

## *All Terrain Vehicles (ATVs)*

Combined with an aging hunter population, the increasingly popular and nearly ubiquitous use of all terrain vehicles (ATVs), also known as off road vehicles (ORVs) or off highway vehicles (OHVs), in hunting has resulted in one of the largest shifts in hunting behavior in the last 50 years. While dirt bikes and three wheeled vehicles were used as early as the 1960s, most hunters continued to use regular size 4-wheel drive vehicles to access the roaded back country. Since the 1980s, relatively inexpensive single seat “4-wheelers” and recently the small multi-place “side-by-side” vehicles have become the chosen conveyance of a large number of hunters. This use, and sometimes misuse of ATVs has caused problems and concerns for many hunters and wildlife managers including:

- Habitat degradation due to ATV use in places they cause resource damage.
- “Pioneering” of new roads and trails into what were previously roadless areas.
- ATV use on roads that have been closed to motorized use.
- Increased noise level and movement in hunting areas leading to many hunters feeling the quality of their hunt has been degraded.
- ATV use during winter especially by shed antler hunters displacing mule deer off of preferred and crucial habitats.

Of course ATVs themselves are not the problem; it is the way people choose to utilize them that creates the concerns and issues. ATV users can be roughly divided into three main sub-groups.

1. Those that use their vehicle in a legal and ethical manner.
2. Users that engage in mostly correct and legal ATV use but under certain circumstances may use their vehicles in an improper manner.
3. Users that routinely ignore or disregard rules and regulations and improperly take their vehicles where they legally are not allowed.

The Working Group recognizes changing the ATV issues will require changing ATV user’s behaviors. ATVs have become a major part of hunting and recreation. Those that consistently use their ATVs in a proper manner need to be complimented and encouraged. The Working Group recognizes WGFDF has limited authority or capacity to deal with this issue on federal lands. Many of the recommendations made are perhaps more appropriate for U.S. Forest Service (USFS) and Bureau of Land Management (BLM) consideration. The Working Group believes the following recommendations should encourage proper use of ATVs.

**Objective: Protect important wildlife habitat and areas from ATV use.**

*Strategy: For motorized and non-motorized use, such as mountain bikes, climbing, hiking, horse use, etc., work with land management agencies to identify areas or zones of protection for important mule deer habitats (i.e., fawning, transition, and wintering areas), migration routes and corridors, and important habitats for other wildlife.*

**Objective: Improve ATV users' land use ethic to minimize resource damage and conflict with other land users.**

*Strategy: Work with land management agencies hunter, and ATV user groups to collaborate and develop better understanding and solutions to the rising ATV use issues and concerns.*

*Strategy: Engage hunter and ATV user groups to participate in BLM and Shoshone National Forest Travel Management planning to develop recommendations addressing site specific prescriptions such as reduced road densities and time of day restrictions.*

*Strategy: Develop new or further promote existing education programs supported by WGFD (via Hunter Education, magazine, website etc.), land management agencies, and ATV organizations such as the Fremont County ATV Association to explain regulations and rules, why the rules are necessary, and promote proper use of ATVs that respect non-ATV and other ATV users.*

*Strategy: Promote awareness the importance of proper, ethical, and considerate ATV use at all times especially during hunting seasons.*

**Objective: Enhance law enforcement capability and effectiveness.**

*Strategy: Increase and improve enforcement of existing regulations on state and federal lands.*

*Strategy: Increase patrols/presence by all agency personnel to reduce violations and promote proper use.*

*Strategy: Increase fines/penalties, including revocation of permit or prohibition of use on repeat violators. Recommend higher penalties for ATV violations during hunting seasons.*

*Strategy: Enable WGFD Game Wardens to enforce ATV violations on federal lands during hunting, angling, and shed antler hunting activities.*

*Strategy: Educate prosecutors on the importance of fully prosecuting ATV violations.*

*Strategy: To improve reporting of illegal use, recommend Wyoming State Parks and Trails pursue improved identification methods, such as increased ATV sticker size (possibly require numbering similar to boats) or require all ATVs to have license plates. (Existing sticker numbers are too small for easy detection unless the ATV is stopped).*

*Strategy: Promote user reporting of violations by providing information what is needed from users to enforce regulations (description of user and vehicle, photographs, time of occurrence, etc.). Develop list of information for a handout card or pamphlet so users can easily carry it with them). Establish a "1-800" line to be used for reporting ATV violations*

## *Predator Management*

Predator management is an important management tool, but is not the sole answer to reversing mule deer population declines. The Working Group believes that working closely with county predator boards and WGFD to gauge predator population levels and explore research projects to determine when predation is a limiting factor for mule deer is paramount to an effective predator management program in the South Wind River and Sweetwater herd units.

Many predators such as coyotes, mountain lions, wolves, bobcats, bears, and eagles prey on mule deer. Ballard et al. (2001) provided a review and synthesis of research on deer-predator relationships, which formed the basis for the chapter on deer-predator relationships in “Mule Deer Conservation: Issues and Management Strategies” (deVos et al. 2003), and the context for the discussion on predation in the “North American Mule Deer Conservation Plan” (Mule Deer Working Group 2004). Predator management includes those actions directed primarily at managing predator populations to reduce the effects of predation on mule deer. Hurley and others (2011) published a comprehensive evaluation of mule deer population response to coyote and mountain lion control efforts in Idaho. The afore-mentioned documents were instrumental in synthesizing information for this section.

Relationships between predator and prey populations, habitat variables, and weather events are dynamic and complex. The extent to which predators affect mule deer populations varies with the circumstances surrounding each mule deer herd at any particular time and can also vary year to year, depending to a great extent on the size of a mule deer population in relation to the habitat’s carrying capacity. Mule deer populations are impacted by variables such as changes in habitat quality and quantity, weather patterns (prolonged drought or severe winters), competition with other ungulates for forage, species and densities of predators, effects of hunting season strategies, and abundance of alternate prey. Managers must consider all of these factors in determining whether predator management is an appropriate and effective solution, and if so, in prescribing effective management strategies.

Predator management may or may not increase the size of a mule deer population. For example, a mule deer population near the habitat’s carrying capacity will not respond, in a sustainable manner, to predator management. Habitat carrying capacity is difficult to determine and varies from season to season and year to year. However, several indices may indirectly indicate carrying capacity has been exceeded. For example, adults in poor body condition, low birth rates, low fawn production, high utilization of available forage, and high population densities all suggest a mule deer population has surpassed the capacity of the habitat to support a growing mule deer herd. In these circumstances, predator management to decrease mule deer predation will not be desirable or effective.

A mule deer population that is chronically depressed may respond to predator management when fawn production and adult mule deer body condition are good, but fawn recruitment and adult survival are low in otherwise favorable habitat (i.e., a “predation sink”, Jenks 2011), provided control actions are sufficient and target the predator(s) limiting the mule deer population. Predator reduction efforts that do not adhere to these qualifications often fail to increase mule deer populations. Hurley et al. (2011) demonstrated decreasing mountain lion populations resulted in

increased fawn/doe ratios, adult doe survival, and a slight increase in the mule deer population, but only temporarily. They also found a decrease in the number of coyotes resulted in increased fawn survival through summer, but did not increase fawn recruitment into the population. Hurley et al. (2011) concluded neither mountain lion nor coyote reductions altered the overall direction of a mule deer population's trajectory. Similarly, Pierce (2012) concluded mountain lion reductions did not change mule deer population trend. Under specific circumstances, a reduction of predator populations may be warranted to attain management goals within an individual herd unit. However, it is imperative to measure the relationship between predator reduction and ungulate population response to determine if predator control efforts are effective in each circumstance.

It has been shown predator management may be beneficial to mule deer when:

1. Predation is a documented factor limiting growth of a mule deer population;
2. The mule deer population is well below the habitat's carrying capacity;
3. Populations of alternate prey species (for example rodents and rabbits) are at low levels;
4. Management actions target the predator species actually limiting the population;
5. Management efforts can realize a sufficient reduction in predator densities to yield results;
6. Predator management is conducted at a time of year when it is most effective;
7. Predator management is focused in small areas of habitat critical to mule deer; and
8. Management efforts can be sustained over a period of years to keep the predator population sufficiently in check.

The strategies outlined below are intended to address the major predators, including trophy game animals (i.e., mountain lions and black bears) that prey on mule deer. Mountain lions and black bears are managed under plans approved by the WGFC. If predation by trophy game animals is documented to have population level impacts on mule deer, management objectives for trophy game animals can be reevaluated.

**Objective: Implement predator management to maintain or increase mule deer populations when predation is determined the cause of a population decline or is suppressing mule deer population recovery in either South Wind River and Sweetwater herd units.**

*Strategy: Predator management intended to increase mule deer recruitment and survival should be considered only if it is determined predation is suppressing population growth and if habitat conditions are sufficient to support a higher mule deer population.*

*Strategy: If the South Wind River or Sweetwater herd units are below carrying capacity, identify the important parturition areas. Annually direct Wildlife Services and County Predator Management Districts to focus coyote control actions from February through July within those areas.*

*Strategy: If the South Wind River or Sweetwater herd units are depressed below objective and the habitat's carrying capacity, and if predation is the primary factor limiting population growth (i.e., fawn production and adult mule deer body condition are good but fawn recruitment and adult survival is low), undertake actions to reduce predator or trophy game populations.*

*Strategy: Predator management is not recommended to support additional growth of any mule deer herd that is over the WGFC's approved population objective, or within any hunt area that is over the desired population level.*

**Objective: Maintain a dialogue and ongoing information exchange between WGFD, the Animal Damage Management Board (ADMB), County Predator Management Districts, and the public with regard to predator management issues.**

*Strategy: Coordinate with the ADMB and County Predator Management Districts to implement predator management where appropriate and in accordance with Wyoming Game and Fish Commission Policy VIIR.*

*Strategy: Disseminate information through public forums, reports, research findings, and peer-reviewed publications to explain and support WGFD's decisions and actions regarding predator management strategies.*

**Objective: Address information gaps in our understanding of the interactions between mule deer, other ungulates, and predators.**

*Strategy: Conduct research to determine if predation is limiting mule deer populations under differing environmental and ecological conditions. Studies should include herds across a range of vital rates (i.e., fawn recruitment and mortality rates) and habitat types to determine if predator control is an appropriate and effective management tool. Effects of climatic factors, habitat quality, and competition should also be considered.*

*Strategy: Evaluate the effectiveness of predator control actions for increasing recruitment and survival, taking into account environmental influences on fawn ratios and populations.*

## *Wildlife Law Enforcement and WGFD Field Presence*

Wildlife laws and regulations serve three fundamental purposes: 1) protect the resource; 2) protect the public; and 3) assure equitable opportunity to enjoy the resource. A strong majority of the hunting and non-hunting publics support effective wildlife laws that are firmly and fairly enforced. Due to the rapid evolution of outdoor technology, increasing numbers of users, and increasing trophy values, wildlife law enforcement remains as important today as it was during the early years of the conservation movement.

Several important functions of law enforcement related to mule deer management and conservation include:

- 1) Maintain an effective system of mule deer management. Perhaps the most important role of law enforcement is to secure the ability to regulate harvest within prescribed, biological limits. The institution of law enforcement and its field presence assure the majority of hunters comply with statutes and regulations designed to manage harvests within sustainable levels.
- 2) Detect and reduce illegal harvest or poaching of mule deer. Mule deer are especially vulnerable during the rut and in winter when they congregate on traditional wintering areas. While poaching impacts both does and bucks of all age classes, most illegal hunting targets mature bucks and removes genetically superior animals from the population. This loss can impact the quality of bucks in future generations of mule deer. Significant poaching activity could reduce the number and quality of bucks available for harvest by law-abiding sportsmen in subsequent years.
- 3) Enforce laws and regulations on WGFC owned lands and State Trust lands to minimize disturbances to mule deer. Coordinate with federal land management agencies to regulate and enforce off-road travel and recreational activity within sensitive habitats (e.g. crucial winter ranges). Mule deer are negatively impacted by heavy off-road travel and high levels of dispersed recreation on winter ranges. Impacts can include added stress to mule deer and displacement from preferred habitats, resource damage, and illegal access to designated wilderness areas or to areas seasonally closed to recreational activity to protect wildlife and other resources. Many hunters concerned about the problems ATV abuse cause are increasingly urging WGFD to establish and enforce ATV travel restrictions during deer hunting seasons.
- 4) Enhance public support and recognition of wildlife laws. Support for WGFD originates at the local level. Through contacts and our presence in local communities, enforcement personnel foster greater understanding of wildlife laws and public support in enforcing them.
- 5) Regulate possession and transportation of wildlife to avoid or limit disease transmission and potential for hybridization with native wildlife. WGFD also regulates disposal of harvested deer and elk from CWD areas.

There is need for increased field presence of WGFD personnel, especially game wardens, to provide assurance of hunter compliance with laws and regulations in the South Wind River and Sweetwater herd units. While only game wardens enforce laws and regulations, the presence of other WGFD personnel patrolling areas of hunter activity provides additional support for game wardens and increases visibility to hunters. Increased WGFD field presence will reduce the occurrence of violations by increasing detection of violators. The Working Group also recognizes the presence of personnel from other agencies including BLM, USFS, County Sheriff, Wyoming Highway Patrol, and Wyoming State Parks and Trails assists WGFD and provides additional field presence and deterrent to wildlife violations. In addition to law enforcement, increased WGFD field presence will allow for increased field data collection including harvest statistics, disease monitoring, habitat assessment and monitoring, landowner and hunters observations and concerns, and increased awareness of environmental conditions affecting wildlife populations (i.e., weather, drought, etc.).

**Objective: Increase field presence of WGFD and/or other agency personnel, especially during hunting seasons.**

*Strategy: Enhance check station coverage, including alternative locations and dates in lieu of the “standard” check stations operated on season opening dates and weekends. Also running them later in evening will allow increased data collection and presence.*

*Strategy: Provide coverage of other areas that may not be open to hunting.*

*Strategy: Work with non-governmental organizations (NGOs) to provide a prize raffle for individuals who check animals into a check station or WGFD office (e.g. other states offer patches or similar mementos).*

*Strategy: Work with NGOs to provide a prize raffle for individuals who respond to their annual harvest survey.*

*Strategy: Pay a higher overtime salary during hunt seasons for all employees logging time in the field. Additional personnel, such as seasonal employees would be advantageous.*

*Strategy: Work with other agencies to increase their presence during hunting seasons.*

*Strategy: Avoid increasing presence in a manner that will add to hunter crowding issues. (e.g. time field checks and patrols so as to not interfere with “prime” hunting times – early morning, late evening).*

**Objective: Increase compliance with wildlife laws designed to protect mule deer populations and habitats.**

*Strategy: Work with federal land management agencies to enforce travel management and seasonal closures on federal lands.*

*Strategy: Enforce laws and regulations on WGFC-owned and State Trust lands.*

*Strategy: Make educational materials, including ATV rules and regulations, more accessible to the public via brochure dissemination and on WGF D website.*

*Strategy: Implement programs to protect mule deer when they are most vulnerable to harassment and illegal take, especially on winter ranges. Publicize high profile enforcement cases that are successfully prosecuted.*

*Strategy: Conduct and improve operations to apprehend poachers and continue to develop more sophisticated enforcement technologies.*

*Strategy: Maintain a sufficient enforcement presence to attain a high level of compliance with wildlife laws and to deter illegal activity.*

*Strategy: Work with the public, prosecutors, judges, and legislators to build support for adequate fines and penalties and for stronger laws to provide an effective deterrent.*

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# **Appendix A. Lander/Green Mountain Mule Deer Working Group Charter**

April 23, 2014

## **Purpose:**

The working group will assist the Wyoming Game and Fish Department's (WGFD) Lander Region in an analysis of the South Wind River Mule Deer Herd Unit (Hunt Areas 92, 94, and 160) and the Sweetwater Mule Deer Herd Unit (Hunt Areas 96 and 97). This working group will engage in meaningful discussions in order to provide the Department with recommendations that may be used in developing short and long-term herd management recommendations for mule deer in Hunt Areas 92, 94, 96, 97, and 160.

## **Requirements:**

- Working group members will be required to attend scheduled meetings.
- Members will be expected to present their own views and those of their peers on the matters being discussed and be willing to engage in respectful, constructive dialogue with other members of the group.
- Members will be expected to attend public forum(s) designed to increase public understanding and awareness of mule deer management in these herd units/hunt areas.
- Each working group member is required to communicate on a regular basis with the constituent group that he or she represents, keeping them informed of working group progress.
- The WGFD will provide a working group facilitator and note taker and is responsible for information dissemination among the working group.

## **Goals:**

- The primary goal is to develop recommendations that will address future management of the South Wind River and Sweetwater mule deer herd units.

## **Deliverables:**

- The working group will provide a recommended management plan, including but not limited to potential hunting season construct, for each herd unit to the Lander Region Wildlife Supervisor.
- Herd Management recommendations, including additional public review, will be completed no later than November 1, 2015 in order to incorporate potential changes into the 2016 online big game hunting season application packet and 2016 deer hunting seasons.
  - NOTE: If the working group is able to formulate recommendations prior to November 1, 2014 they may be presented for public review no later than December 15, 2014 for possible inclusion in the 2015 online big game hunting season application information.
- The recommendation(s) will be presented to the public during the 2014 and/or 2015 December public meetings.
- During this process written public comment will be requested and analyzed by the working group.

## Internal Decision Making Process:

Working group members, through the help of a Department facilitator, will strive for consensus whenever group decisions are necessary.

## Timeline:

The formation of the working group will begin April, 2014. The working group will conduct their business between June 1, 2014 and December 31, 2015.

## Membership:

The working group will be comprised of individuals who represent sportspersons, landowners, outfitters, Lander/Riverton businesses and the Game and Fish. The number and interests may be as follows:

- 2 - Public at large
- 2 - Landowners/livestock producers (may include ranch managers) with interests in the aforementioned herd units/hunt areas.
- 3 - Hunters (one youth hunter, one archery hunter)
- 1 - Outfitter
- 1 - Area business person
- 2 - Non-Governmental Organization representatives
- 2 - WGFD field level wildlife managers

Technical advisors may be requested on an as needed basis.

## Scope/Sideboards:

- Discussion and recommendations shall be specific to mule deer management in deer Hunt Areas 92, 94, 96, 97, and 160.
- The Lander/Green Mountain Mule Deer Working Group will be advisory in nature and will make recommendations to/through WGFD, which will then go through additional public review and internal WGFD review at the region (Lander) and administrative (Cheyenne) levels.
- Recommendations shall be based in accepted scientific mule deer management practices

## Publicity:

The Department's Lander Region Information and Education Specialist will be responsible for drafting and distributing meeting announcements. All meeting agendas, approved minutes and graphic presentations will be posted in a timely fashion on the Department's webpage for public information and review.

Endorsement Process: The working group is advisory in nature. The Department will look to this group for direct advice and innovation in formulating recommendations for the future management of the South Wind River (hunt areas 92, 94, and 160) and the Sweetwater (hunt areas 96 and 97) mule deer herd units. The Department will incorporate the working group recommendations into future management decisions to the maximum extent possible.

Officers: The working group will select a chairperson. The chair's role is to work with the facilitator to develop meeting agendas, identify information and technical resource needs, and to coordinate and collaborate with the working group members throughout the tenure of the group.

## Appendix B. Hunter Attitude Survey

### Summary

#### Did you hunt MULE DEER in WYOMING in the past 5 years?

Yes	<b>225</b>	98%
No	<b>4</b>	2%
Don't know	<b>0</b>	0%

### Mule Deer Hunting Preferences

#### Thinking about when you've hunted mule deer, what is your most important reason for hunting?

For the meat	<b>70</b>	31%
For a trophy	<b>35</b>	15%
To be with family and friends	<b>30</b>	13%
For the sport and recreation	<b>70</b>	31%
To be close to nature	<b>9</b>	4%
Don't know	<b>0</b>	0%
Other	<b>7</b>	3%

#### What do you look for in a quality mule deer hunt?

Harvest success	<b>105</b>	46%
Solitude	<b>86</b>	38%
Recreation	<b>75</b>	33%
Opportunity to spend time with family / companions	<b>97</b>	42%
Presence of large antlered bucks	<b>108</b>	47%
Outdoor experience	<b>114</b>	50%
Other	<b>14</b>	6%

## Characteristics of Hunting Mule Deer in the Lander/Green Mountain Area

In what hunt area in the Lander/Green Mountain area have you hunted mule deer the most often in the past 5 years?

92	<b>65</b>	28%
94	<b>36</b>	16%
96	<b>76</b>	33%
97	<b>41</b>	18%
160	<b>17</b>	7%

## Reasons for, Opinions on, and Constraints to Hunting Mule Deer in the Lander/Green Mountain area.

What were all the reasons you chose to hunt mule deer in the Lander/Green Mountain area in the past 5 years?

Recommended by family / friend	<b>52</b>	23%
Close to home	<b>118</b>	52%
Access (area is easy to access, have permission)	<b>137</b>	60%
Hunted in the same area before	<b>155</b>	68%
Good chance of getting a deer	<b>91</b>	40%
Large antlered bucks in the area	<b>53</b>	23%
Hunting other game in addition to deer	<b>62</b>	27%
Few other hunters in the area	<b>43</b>	19%
Aesthetic reasons	<b>42</b>	18%
Season dates worked well with schedule	<b>56</b>	24%
Liked the regulations governing the area	<b>28</b>	12%
Other	<b>15</b>	7%

**How satisfied or dissatisfied were you with the overall quality of your mule deer hunting experience in the Lander/Green Mountain area during the last season you hunted there?**

Very satisfied	<b>35</b>	15%
Somewhat satisfied	<b>62</b>	27%
Neither satisfied nor dissatisfied	<b>30</b>	13%
Somewhat dissatisfied	<b>57</b>	25%
Very dissatisfied	<b>37</b>	16%

**Are there any things that have caused you NOT to hunt mule deer in the Lander/Green Mountain area as much as you would like in the past 5 years?**

No, hunted as much as I liked	<b>59</b>	26%
Lack of access / nowhere to hunt / can't get to hunting lands	<b>13</b>	6%
No time / family obligations / work obligations	<b>35</b>	15%
Poor health / age	<b>7</b>	3%
Poor behavior of other hunters / fear of injury from other hunters	<b>20</b>	9%
Too crowded	<b>60</b>	26%
Not enough game	<b>86</b>	38%
Pollution / litter	<b>3</b>	1%
Cost of equipment	<b>3</b>	1%
Cost of licenses	<b>18</b>	8%
Complicated regulations / difficulty understanding regulations	<b>6</b>	3%
Finding somebody to go with	<b>5</b>	2%
Having to travel too far	<b>16</b>	7%
Weather	<b>16</b>	7%
Bag limits	<b>7</b>	3%
Season lengths / dates of season	<b>48</b>	21%
Don't know	<b>2</b>	1%
Other	<b>22</b>	10%

## Opinions on Mule Deer Management in the Lander/Green Mountain Area

**Do you think the Department is doing an excellent, good, fair, or poor job of managing the mule deer population in the Lander/Green Mountain area?**

Excellent	<b>15</b>	7%
Good	<b>73</b>	32%
Fair	<b>98</b>	43%
Poor	<b>31</b>	14%

**In your opinion, has the way the Department manages mule deer in the Lander/Green Mountain area improved, remained the same, or gotten worse IN THE PAST 5 YEARS?**

Improved	<b>31</b>	14%
Remained the same	<b>89</b>	39%
Gotten worse	<b>49</b>	21%
Don't know	<b>54</b>	24%

**Has the way the Department manages mule deer in the Lander/Green Mountain area improved, remained the same, or gotten worse IN THE PAST 10 YEARS?**

Improved	<b>33</b>	14%
Remained the same	<b>52</b>	23%
Gotten worse	<b>64</b>	28%
Don't know	<b>74</b>	32%

## **Opinions on and Attitudes Toward the Size of the Mule Deer Population and the Number of Hunters in the Lander/Green Mountain area.**

**The number of bucks in the area was adequate in the past 5 years.**

Strongly agree	<b>10</b>	4%
Moderately agree	<b>41</b>	18%
Neither agree nor disagree	<b>44</b>	19%
Moderately disagree	<b>72</b>	31%
Strongly disagree	<b>52</b>	23%

**You heard about or saw trophy bucks in the area in the past 5 years.**

Strongly agree	<b>23</b>	10%
Moderately agree	<b>61</b>	27%
Neither agree nor disagree	<b>40</b>	17%
Moderately disagree	<b>55</b>	24%
Strongly disagree	<b>39</b>	17%

**There were too many other hunters where you hunted most often in the Lander/Green Mountain area.**

Strongly agree	<b>45</b>	20%
Moderately agree	<b>61</b>	27%
Neither agree nor disagree	<b>73</b>	32%
Moderately disagree	<b>29</b>	13%
Strongly disagree	<b>12</b>	5%

**In your opinion, has each of the following increased, stayed the same, or decreased in the past 5 years in the Lander/Green Mountain area you hunted.**

**Total number of mule deer.**

Increased	<b>17</b>	7%
Stayed the same	<b>51</b>	22%
Decreased	<b>126</b>	55%
Don't know	<b>30</b>	13%

**Number of mule deer harvested by hunters each year.**

Increased	<b>5</b>	2%
Stayed the same	<b>35</b>	15%
Decreased	<b>91</b>	40%
Don't know	<b>92</b>	40%

**The number of hunters in the field.**

Increased	<b>88</b>	38%
Stayed the same	<b>77</b>	34%
Decreased	<b>25</b>	11%
Don't know	<b>34</b>	15%

**The number of bucks.**

Increased	<b>13</b>	6%
Stayed the same	<b>34</b>	15%
Decreased	<b>142</b>	62%

Don't know            **34**    15%

**The remainder of the questions in this survey are about mule deer in the Lander/Green Mountain area in general, which includes ALL hunt areas in the Lander/Green Mountain area, NOT just the hunt area where you hunted most often.**

**How acceptable or unacceptable is the number of mule deer in the Lander/Green Mountain area?**

Very acceptable	<b>4</b>	2%
Acceptable	<b>48</b>	21%
Unsure / Neither	<b>78</b>	34%
Unacceptable	<b>75</b>	33%
Very unacceptable	<b>17</b>	7%

**How acceptable or unacceptable is the number of mule deer harvested in the Lander/Green Mountain area each year?**

Very acceptable	<b>3</b>	1%
Acceptable	<b>38</b>	17%
Unsure / Neither	<b>136</b>	59%
Unacceptable	<b>38</b>	17%
Very unacceptable	<b>6</b>	3%

**How acceptable or unacceptable is the number of hunters in the field in the Lander/Green Mountain area?**

Very acceptable	<b>7</b>	3%
Acceptable	<b>67</b>	29%
Unsure / Neither	<b>78</b>	34%
Unacceptable	<b>56</b>	24%
Very unacceptable	<b>12</b>	5%

**Do you think each of the following has had a major impact, a minor impact, or no impact at all on the mule deer population in the Lander/Green Mountain area in the past 5 years.**

**Highway mortality, that is, mule deer deaths resulting from deer-vehicle collisions**

Major impact	<b>19</b>	8%
Minor impact	<b>133</b>	58%
No impact at all	<b>25</b>	11%
Don't know	<b>47</b>	21%

**Disease, such as Chronic Wasting Disease**

Major impact	<b>23</b>	10%
Minor impact	<b>86</b>	38%
No impact at all	<b>35</b>	15%
Don't know	<b>79</b>	34%

**Competition for food and habitat from other big game animals, such as elk and white-tailed deer**

Major impact	<b>31</b>	14%
Minor impact	<b>118</b>	52%
No impact at all	<b>38</b>	17%
Don't know	<b>34</b>	15%

### **Winterkill, that is, mule deer deaths resulting from starvation during the winter months**

Major impact	<b>70</b>	31%
Minor impact	<b>92</b>	40%
No impact at all	<b>14</b>	6%
Don't know	<b>47</b>	21%

### **Poaching**

Major impact	<b>26</b>	11%
Minor impact	<b>100</b>	44%
No impact at all	<b>15</b>	7%
Don't know	<b>81</b>	35%

### **Mountain lions preying on mule deer**

Major impact	<b>56</b>	24%
Minor impact	<b>103</b>	45%
No impact at all	<b>9</b>	4%
Don't know	<b>55</b>	24%

### **Coyotes preying on mule deer**

Major impact	<b>49</b>	21%
Minor impact	<b>109</b>	48%
No impact at all	<b>13</b>	6%
Don't know	<b>51</b>	22%

## Opinions on and Attitudes Toward Mule Deer Management in the Lander/Green Mountain area

**In your opinion, what is the single most important factor that should be used to determine how many mule deer should be in the herd in the Lander/Green Mountain area?**

Habitat	<b>136</b>	59%
The opportunity for hunters to hunt every year regardless of success	<b>18</b>	8%
A high chance of harvest success even if it means limited hunting opportunities	<b>48</b>	21%
Other	<b>15</b>	7%

**Would you support or oppose managing for trophy bucks in the Lander/Green Mountain area if it meant more restrictions and reduced chances of hunting every year?**

Strongly support	<b>67</b>	29%
Moderately support	<b>67</b>	29%
Neither support nor oppose	<b>27</b>	12%
Moderately oppose	<b>33</b>	14%
Strongly oppose	<b>22</b>	10%
Don't know	<b>7</b>	3%

**Would you support or oppose an archery only/choose your weapon (Type 9) season in the Lander/Green Mountain area.**

Strongly support	<b>44</b>	19%
Moderately support	<b>35</b>	15%
Neither support nor oppose	<b>44</b>	19%
Moderately oppose	<b>28</b>	12%
Strongly oppose	<b>58</b>	25%
Don't know	<b>11</b>	5%

**Would you support or oppose limiting the number of hunters in the field in the Lander/Green Mountain area, considering that it might make it less likely that you would get a license?**

Strongly support	<b>65</b>	28%
Moderately support	<b>66</b>	29%
Neither support nor oppose	<b>27</b>	12%
Moderately oppose	<b>27</b>	12%
Strongly oppose	<b>30</b>	13%
Don't know	<b>7</b>	3%

**In the Lander/Green Mountain area, do you prefer general seasons, which mean you could hunt every year, and have the ability to hunt multiple hunt areas, but possibly a reduced chance of harvest, or limited quota seasons? Limited quota seasons mean you might not hunt every year in the limited quota hunt areas and may lose the opportunity to hunt multiple hunt areas, but you would probably have a higher chance of harvest when you do hunt.**

General Seasons	<b>98</b>	43%
Limited Quota Seasons	<b>96</b>	42%
No preference / don't know	<b>27</b>	12%

**Please tell us how likely you would be to do each of the following if you couldn't hunt mule deer in the Lander/Green Mountain area every year.**

**Hunt mule deer in other general hunt areas outside the Lander/Green Mountain area**

Very likely	<b>91</b>	40%
Somewhat likely	<b>75</b>	33%
Not at all likely	<b>51</b>	22%
Don't know	<b>7</b>	3%

**Hunt mule deer in limited quota areas**

Very likely	<b>74</b>	32%
Somewhat likely	<b>95</b>	41%
Not at all likely	<b>43</b>	19%
Don't know	<b>12</b>	5%

**Stop hunting mule deer until you could hunt in the Lander/Green Mountain area**

Very likely	<b>35</b>	15%
Somewhat likely	<b>51</b>	22%
Not at all likely	<b>121</b>	53%
Don't know	<b>17</b>	7%

**How acceptable or unacceptable is antlerless (doe/fawn) deer harvest as a mule deer management tool in the Lander/Green Mountain area?**

Very acceptable	<b>42</b>	18%
Acceptable	<b>70</b>	31%
Unsure / Neither	<b>29</b>	13%
Unacceptable	<b>32</b>	14%
Very unacceptable	<b>31</b>	14%
Don't know	<b>17</b>	7%

## Opinions on Habitat in the Lander/Green Mountain area

**Do you think the quality of mule deer habitat in the Lander/Green Mountain area has improved, remained the same, or gotten worse in the past 5 years?**

Improved	<b>24</b>	10%
Remained the same	<b>100</b>	44%
Gotten worse	<b>58</b>	25%
Don't know	<b>41</b>	18%

**In your opinion, how important is the QUALITY of habitat on SUMMER ranges in determining the survival of mule deer in the Lander/Green Mountain area herd?**

Very important	<b>149</b>	65%
Moderately important	<b>51</b>	22%
A little important	<b>8</b>	3%
Not at all important	<b>3</b>	1%
Don't know	<b>12</b>	5%

**How important is the AMOUNT of habitat on SUMMER ranges in determining the survival of mule deer in the Lander/Green Mountain area herd?**

Very important	<b>138</b>	60%
Moderately important	<b>65</b>	28%
A little important	<b>7</b>	3%
Not at all important	<b>0</b>	0%
Don't know	<b>13</b>	6%

**In your opinion, how important is the QUALITY of habitat on WINTER ranges in determining the survival of mule deer in the Lander/Green Mountain area herd?**

Very important	<b>190</b>	83%
Moderately important	<b>19</b>	8%
A little important	<b>1</b>	0%
Not at all important	<b>1</b>	0%
Don't know	<b>10</b>	4%

**How important is the AMOUNT of habitat on WINTER ranges in determining the survival of mule deer in the Lander/Green Mountain area herd?**

Very important	<b>183</b>	80%
Moderately important	<b>30</b>	13%
A little important	<b>0</b>	0%
Not at all important	<b>1</b>	0%
Don't know	<b>6</b>	3%

**How would you rate the current QUALITY of deer habitat in the Lander/Green Mountain area?**

Excellent	<b>23</b>	10%
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Good	<b>97</b>	42%
Fair	<b>58</b>	25%
Poor	<b>20</b>	9%
Don't know	<b>25</b>	11%

**How important do you think managing the QUALITY of deer habitat in the Lander/Green Mountain area should be to the Department?**

Very important	<b>140</b>	61%
Moderately important	<b>62</b>	27%
A little important	<b>10</b>	4%
Not at all important	<b>2</b>	1%
Don't know	<b>7</b>	3%

**How important do you think managing the AMOUNT of deer habitat in the Lander/Green Mountain area should be to the Department?**

Very important	<b>144</b>	63%
Moderately important	<b>60</b>	26%
A little important	<b>9</b>	4%
Not at all important	<b>3</b>	1%
Don't know	<b>7</b>	3%

**In the last 5 years, have habitat conditions influenced the number of mule deer in the Lander/Green Mountain area to increase, remain the same, decrease, or did the habitat conditions not influence the number of mule deer in the Lander/Green Mountain area at all?**

Increase	<b>6</b>	3%
Remain the same	<b>60</b>	26%
Decrease	<b>75</b>	33%

Habitat conditions did not influence	<b>15</b>	7%
Don't know	<b>67</b>	29%

**Do you agree or disagree that there is enough WINTER habitat in the Lander/Green Mountain area to sustain the current size of the mule deer population?**

Strongly agree	<b>25</b>	11%
Moderately agree	<b>75</b>	33%
Neither agree nor disagree	<b>31</b>	14%
Moderately disagree	<b>25</b>	11%
Strongly disagree	<b>4</b>	2%
Don't know	<b>61</b>	27%

**Who do you think has the most influence and control of habitat on deer WINTER ranges for the Lander/Green Mountain area herd?**

Bureau of Land Management	<b>90</b>	39%
Private Landowners	<b>37</b>	16%
US Forest Service	<b>5</b>	2%
Wyoming Game and Fish Department	<b>21</b>	9%
Wyoming State Land Office	<b>2</b>	1%
Don't know	<b>50</b>	22%
Other	<b>18</b>	8%

## Opinions on Issues Related to Disturbance

**Does collecting shed antlers in the winter in the Lander/Green Mountain area where mule deer are concentrated have a major impact, a minor impact, or no impact at all on the deer?**

Major impact	<b>33</b>	14%
Minor impact	<b>84</b>	37%
No impact at all	<b>63</b>	28%
Don't know	<b>42</b>	18%

**Would you support or oppose efforts by the Department to regulate the hunting or collecting of shed antlers during the winter in areas where mule deer are concentrated in the Lander/Green Mountain area?**

Strongly support	<b>64</b>	28%
Moderately support	<b>58</b>	25%
Neither support nor oppose	<b>44</b>	19%
Moderately oppose	<b>28</b>	12%
Strongly oppose	<b>17</b>	7%
Don't know	<b>12</b>	5%

**How acceptable or unacceptable is the amount of ATV use in the Lander/Green Mountain hunt area where you most often hunted mule deer in the past 5 years?**

Very acceptable	<b>25</b>	11%
Acceptable	<b>81</b>	35%
Unsure / Neither	<b>37</b>	16%
Unacceptable	<b>46</b>	20%
Very unacceptable	<b>33</b>	14%

**How acceptable or unacceptable is the amount of ATV use on mule deer winter ranges in the Lander/Green Mountain area?**

Very acceptable	<b>9</b>	4%
Acceptable	<b>46</b>	20%

Unsure / Neither	<b>76</b>	33%
Unacceptable	<b>50</b>	22%
Very unacceptable	<b>37</b>	16%

**Would you support or oppose efforts to regulate the use of ATVs during hunting season in the Lander/Green Mountain area?**

Strongly support	<b>77</b>	34%
Moderately support	<b>37</b>	16%
Neither support nor oppose	<b>34</b>	15%
Moderately oppose	<b>26</b>	11%
Strongly oppose	<b>43</b>	19%
Don't know	<b>6</b>	3%

**Would you support or oppose efforts to regulate the use of ATVs during the WINTER in the Lander/Green Mountain area where mule deer are concentrated?**

Strongly support	<b>102</b>	45%
Moderately support	<b>57</b>	25%
Neither support nor oppose	<b>28</b>	12%
Moderately oppose	<b>15</b>	7%
Strongly oppose	<b>14</b>	6%
Don't know	<b>7</b>	3%

**Would you support or oppose efforts to regulate the use of ATVs during the SUMMER in the Lander/Green Mountain area where mule deer are concentrated?**

Strongly support	<b>54</b>	24%
Moderately support	<b>44</b>	19%

Neither support nor oppose	<b>43</b>	19%
Moderately oppose	<b>32</b>	14%
Strongly oppose	<b>44</b>	19%
Don't know	<b>6</b>	3%

## Affiliation Information / Demographic Characteristics

**Within in the past 2 years have you been a member of, donated to, or been affiliated with any of the following organizations?**

Mule Deer Foundation	<b>48</b>	21%
Trout Unlimited	<b>16</b>	7%
Wyoming Stockgrowers Association	<b>5</b>	2%
Wyoming Woolgrowers Association	<b>1</b>	0%
Wyoming Outfitters and Guides Association	<b>4</b>	2%
Wyoming Wildlife Federation	<b>23</b>	10%
National Wildlife Federation	<b>6</b>	3%
Sportsmen for Fish and Wildlife	<b>9</b>	4%
Bowhunters of Wyoming	<b>7</b>	3%
Predator Management Districts	<b>2</b>	1%
Biodiversity Conservation Alliance	<b>1</b>	0%
Muley Fanatics	<b>9</b>	4%
Rocky Mountain Elk Foundation	<b>108</b>	47%
None of These	<b>80</b>	35%
Other	<b>25</b>	11%

**Have you ever used outfitter or guide services to hunt mule deer in the Lander/Green Mountain area?**

Yes	<b>4</b>	2%
No	<b>217</b>	95%

