

## RANGE-WIDE STATUS OF MULE DEER AND BLACK-TAILED DEER IN 2014.

Mule Deer Working Group. Western Association of Fish and Wildlife Agencies, USA.

**Abstract:** The purpose of this paper is to provide a general overview of the current status of black-tailed and mule deer (*Odocoileus hemionus*) population abundance and harvest data throughout their range in North America. The Mule Deer Working Group (MDWG) is comprised of 23 state and provincial agencies in the Western Association of Fish and Wildlife Agencies (WAFWA) whose purpose is to provide a collaborative approach to finding solutions to improve mule deer and black-tailed deer conservation and management. The most common information requested of the MDWG is regarding the general population status and trajectory of mule deer and black-tailed deer populations. Stakeholders are interested in whether mule deer are still declining or in the process of recovering. To provide a quick snapshot of the status of this species, we assembled this information by having each agency MDWG representative provide a current estimated population size, status and general harvest information for mule and black-tailed deer for their respective jurisdiction. All states and provinces use very different methods to survey and estimate populations, parameters and harvest. Some have more scientifically rigorous processes than others, based on their resources and management needs. It is beyond the scope of this paper to provide a detailed accounting of the wide variation in data collection methodology and statistical treatment of the information collected. This paper will serve to inform biologists and interested public on the current status of this important species.

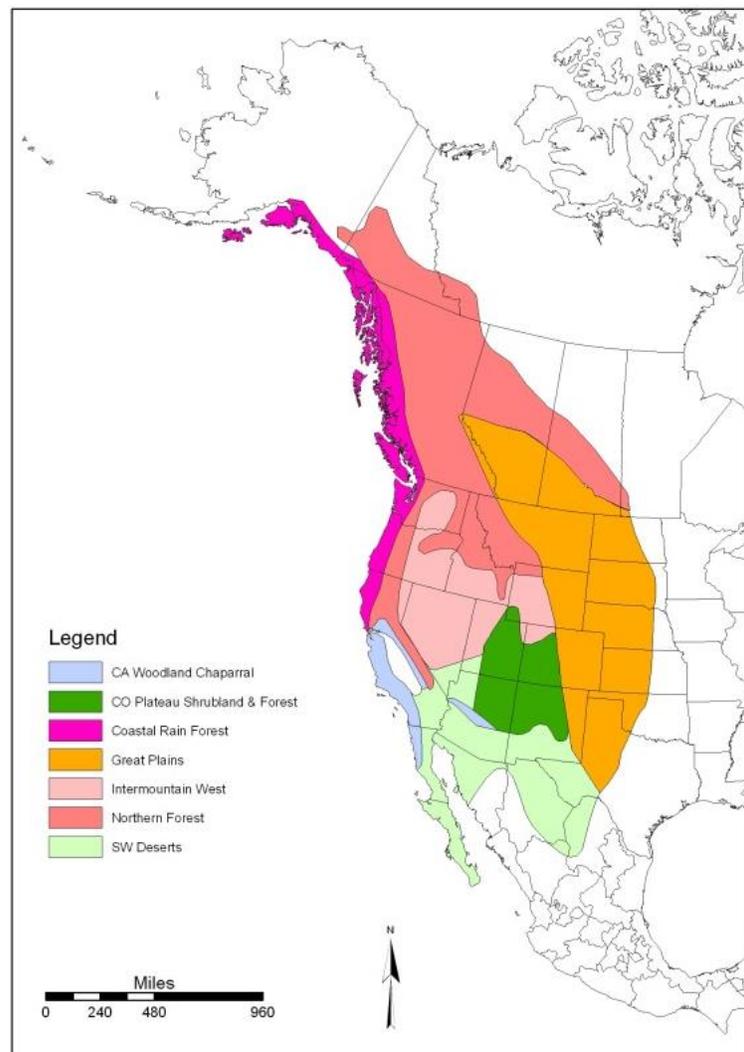


Table 1. Range-wide estimation of population size, harvest, and hunter numbers of mule deer provided by member agencies of WAFWA, 2014.

	Estimated Population <sup>1</sup>	Total Harvest	% males in Harvest	Hunter Numbers
Alberta	140,000	13,000	53%	29,500
Arizona	75,000 - 120,000	7,326	99%	61,118
British Columbia	115,000 - 205,000	14,232	90%	57,865
California <sup>3</sup>	450,000 - 550,000	31,076	98%	178,940*
Colorado <sup>4</sup>	391,000	32,941	75%	74,233
Idaho	230,000 - 290,000	25,726	81%	77,581
Kansas	50,000	2,715	82%	18,819
Montana	Unknown	37,793	82%	165,473
Nebraska <sup>5</sup>	70,000	8,611	80%	15,000
Nevada	108,000	9,367	88%	22,656
New Mexico <sup>4</sup>	80,000 - 100,000	8,633	99%	34,639
North Dakota <sup>6</sup>	14,994 (Badlands)	2,424	70%	4,830
Oklahoma <sup>5</sup>	1,500 - 2,000	189	95%	730
Oregon	220,000 - 230,000	23,249	92%	67,112
Saskatchewan	30,000 - 60,000	5,907	NA	10,875
South Dakota <sup>7</sup>	65,000- 128,000	7,000	61%	71,300
Texas	187,000 – 251,000	8,386	94%	22,418
Utah	332,900	29,270	94%	83,180
Washington <sup>8</sup>	85,000 - 95,000	11,427	82%	123,928
Wyoming	376,000	25,410	82%	48,721
Yukon	1,000	11	100%	12

<sup>1</sup>Estimated populations may be presented as ranges to denote the difficulty and levels of uncertainty in gathering an estimate over a large spatial scale.

<sup>2</sup>All data presented are from the most recent year available.

<sup>3</sup>Black-tailed and mule deer numbers combined. "Hunter Numbers" is actually "number of tags issued" so the actual number of hunters will be less.

<sup>4</sup>Population estimate, harvest, and hunters include white-tailed deer which cannot be easily removed

<sup>5</sup> Number of mule deer hunters are difficult to estimate because many mule deer permits allow take of either species.

<sup>6</sup> Population estimate only for the Badlands, which is the primary range.

<sup>7</sup> Hunter number includes whitetail hunters.

<sup>8</sup>Total deer hunters. Do not estimate hunters by species/subspecies.

Table 2. Range-wide estimation of population size, harvest and hunter numbers of black-tailed deer provided by WAFWA member agencies, 2014.

	Estimated Population <sup>1</sup>	Total Harvest	% males in Harvest	Hunter Numbers
Alaska		13,166	83%	11,108
British Columbia	99,000 - 155,000	6,482	93%	11,270
Hawaii <sup>3</sup>	1,000-1,200	30	100%	
Oregon	300,000 - 320,000	20,403	90%	101,081
Washington <sup>8</sup>	90,000 - 110,000	10,937	82%	123,928

<sup>1</sup>Estimated populations may be presented as ranges to denote the difficulty and levels of uncertainty in gathering an estimate over a large spatial scale.

<sup>2</sup>All data presented are from the most recent year available.

<sup>3</sup>Population estimate includes only public hunting areas, not private land. Harvest from 2011 because 2012 had fire closure declarations.

### **Alaska**

Sitka black-tailed deer are native to the wet coastal rainforests of Southeast Alaska (ADFG's Region 1) and due to historic translocation efforts, have now established populations in parts of South Central Alaska (ADFG's Region 2), including Prince William Sound and on Kodiak and Afognak islands. Populations fluctuate predominately with the severity of winters - increasing during a series of mild winters and sometimes declining dramatically after one or more severe winters. Predation can slow recovery of deer after these events. Harvest by deer hunters is believed to be compensatory in Alaska as a whole, due to the remoteness of most areas. However, early and heavy snowfall can occasionally concentrate deer on beaches in areas relatively close to population centers, leading to substantially higher harvests in these areas. In contrast, where logging road systems exist adjacent to communities, low snowfall in the fall or early winter may allow hunters prolonged use of these secondary roads, leading to higher than normal harvests in these areas.

In Southeast Alaska, Sitka black-tailed deer are fairly ubiquitous, and the most frequently pursued big game species. Deer density on the mainland has historically appeared to be much lower than on the islands, presumably due to lower habitat quality. Because of the island geography, varying weather patterns, different predator guilds, and differences in the extent and pattern of forest logging, deer densities can vary greatly from one game management unit (GMU) to another and even within GMU's. Population size or density has never been formally calculated in Southeast Alaska due to the difficulty of employing various techniques in remote and densely forested areas. Historically, we have attempted to index changes in deer abundance

using deer pellet count surveys and hunter surveys. Currently we are conducting research to evaluate the implementation of a regional monitoring protocol using deer fecal DNA for mark-recapture estimation.

Southeast Alaska experienced 2 severe and 1 above average winter between 2006 and 2009, which led to substantial declines in the deer population and management actions such as doe harvest closures were taken in parts of the region. After these years, we documented a decline in deer harvest, deer hunters, and hunter effort, suggesting a population decline. From 2010-2014 we have experienced average to below average overall winter severity across most of the region. A single early and heavy snowfall event in northern southeast Alaska caused a substantial increase in harvest in some areas for the 2011-2012 season. So while harvest was lower in 2012-2013 than the previous year, overall hunter harvest and effort trends appear to be still rebounding from those previously mentioned lows during 2006-2009. However, it should be noted that deer densities do remain of particular concern in GMUs 1A and 3Z. The reduced number of deer in these areas from historical highs is thought to involve the effects of periodic severe winters, reduced habitat quality, and predation slowing deer population recovery. Intensive management (predator control) proposals for wolves were reviewed and approved by the Board of Game in 2013. In 2014, research has commenced to assess deer population status and habitat conditions in certain watersheds to better evaluate the potential causes of the decline of deer in these areas. Predator control will not be implemented until preliminary research indicates it is warranted.

In South Central Alaska, the weather patterns can differ substantially from what is occurring in Region 1. Effects of winter in 2011 to 2012 in GMU 6 were the worst in probably 30 years. Winter mortality was estimated at >50% overall, and was probably 70% in western Prince William Sound. Deer congregating on beaches due to early and heavy snowfall increased hunter success in winter 2011-2012 to a record high, but subsequent effects of this harvest and high winter mortality caused a decrease in harvest numbers from the previous year by approximately 80% after the 2012-2013 winter. Deer numbers are still low but some signs of recovery were noted with an improvement in winter survival. In GMU 8, the deer population of the Kodiak archipelago also declined due to a severe winter with near-record snowfall in 2011 to 2012. For reasons similar to those stated for GMU 6, harvest for the 2012-2013 year was down by over 40% from the previous year. Deer mortality was greatest on the northern portion of Kodiak and the western side of Afognak Island. Deer populations are expected to rebound after a mild winter during 2013-2014. No regulatory action is anticipated for either area in the upcoming year.

-Karin McCoy, Alaska Department of Fish and Game

### **Alberta**

Throughout the province, mule deer populations have recovered from recent hard winter conditions and most wildlife management units (WMU's) are at or near established goals. In the south, this year's spring moisture is providing good vegetative

cover on the landscape for hiding cover and forage. The grasslands and coulee landscape provides resident and non-resident hunters great mule deer harvest opportunities in the central Parkland region of Alberta, conditions have been good for mule deer as well, supporting buck:doe ratios of up to 50:100 as well as high recruitment. Chronic Wasting Disease is present along the eastern border of the province. Disease surveillance remains in place to determine prevalence and spread, but there are no effects to populations detected at this time.

Mule deer continue to do well in the northwest, with the forest/agriculture interface and the major river valleys providing habitat to support good populations and excellent hunting opportunities. In the northeast, mule deer typically occur at low densities, mostly found along the major river valleys. Hunting pressure here is low as hunters focus on other big game species.

The current provincial population estimate is 140,000 mule deer, with resident hunters harvesting approximately 13,000 animals last year (half were antlered). For the 2014 hunting season the provincial population will support close to 30,000 hunting opportunities for residents, with antlered mule deer licenses making up 40% of that opportunity.

Interest for mule deer hunting opportunity continues to increase in the province, with the number of applicants last year up almost 6% from the previous year. In the 2013 license draw, 95,446 resident hunters applied for antlered and antlerless mule deer licenses. Over two-thirds of those applicants were interested in antlered mule deer licenses. Alberta also supports a healthy commercial hunting industry, with approximately 1,500 antlered mule deer licenses available for non-residents through outfitter-guide allocations.

-Kim Morton, Environment and Sustainable Resource Development - Fish and Wildlife

### **Arizona**

Mule deer populations reached the most recent peak in the early 1980s. Mule deer declined through about 2000 and since then have probably increased. Specifically, total mule deer harvest reached the most recent low in 2003, with a harvest of only 5,254 (all weapon types). In 2012, 7,144 mule deer were harvested, indicating a 36% increase – and probably a similar population increase as well. This is still 53% below the 1983 harvest of 13,076. Most deer populations within the state were surveyed annually using fixed-wing aircraft or helicopter with supplemental ground surveys used as well. Mule deer were surveyed during the breeding season to estimate buck:doe and fawn:doe ratios.

Hunter harvest was estimated using a voluntary post card questionnaire that may be returned with postage prepaid or responses may be entered online. Currently, we receive about 35–55% response rate, with about 15–20% of all responses online. Buck:doe ratios for mule deer were managed at 20–30:100. Alternative management units were managed at higher buck:doe ratios with added guidelines regarding the age structure of the harvest or hunter density. These units approximate about 5% of the opportunity offered annually.

Recent wildfires created situations that were favorable to improved growth of deer populations, yet limited land management actions (e.g., prescribed fire, thinning) benefitting forage production are implemented annually. The Department has initiated a wildlife habitat enhancement initiative targeting habitat improvements in Units 16A and 21. During fiscal year 2015, about \$800,000 will be spent in these units (\$400,000 each), with an additional \$1,000,000 in fiscal years 2016 and 2017. The goal of this initiative to effect a population-level change due to the habitat improvements implemented on the ground.

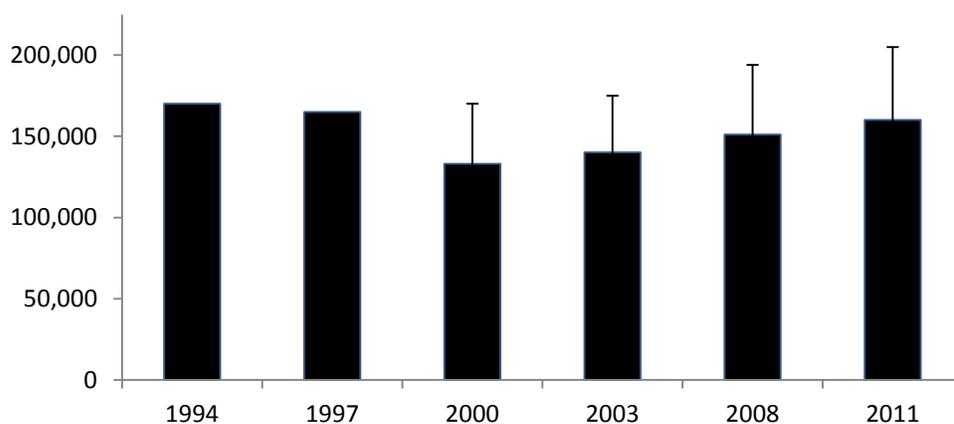
-Brian Wakeling, Arizona Game and Fish Department

### **British Columbia**

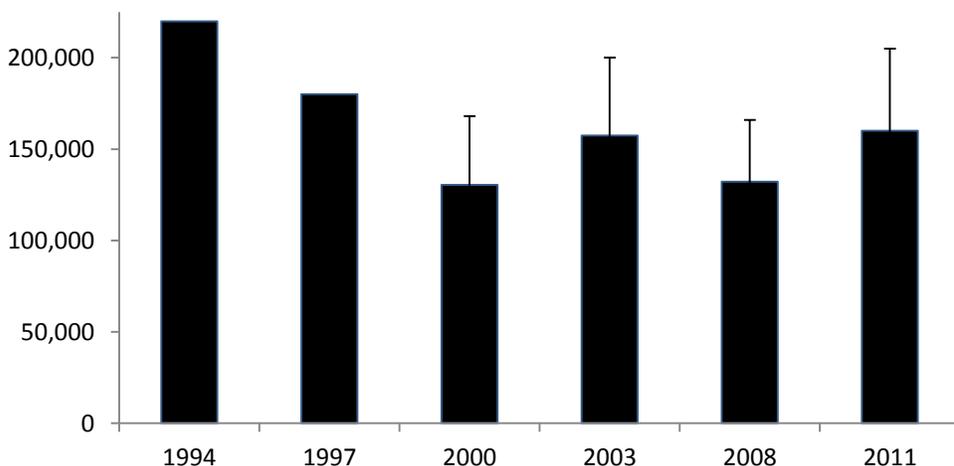
Mule deer numbers in British Columbia have remained relatively stable from 1994-2011. Since 2008, most of the province had stable to increasing mule deer numbers while some localized areas in south-central, southeast, and northeast experienced declines. These declines may have been attributed to declining quality and quantity of shrub forage on mule deer winter ranges largely due to lack of forest fire, severe winter conditions and increased predation by wolves, cougars and bears. Increasing mule deer populations in parts of the province may have been related to several mild winters and increased forage availability resulting from large wildfires and other disturbances, such as forest removal. Buck harvest decreased slightly from 2008-2011. Mule deer harvest is managed with a general open season for bucks and limited opportunity for antlerless harvest through limited entry hunts. Buck seasons are structured using a combination of any-buck and  $\geq 3$  or  $\geq 4$  antler point restriction with seasons running for up to 101 days. In the south, there are generally  $\geq 4$  antler point restrictions for September and parts of November, with any-buck seasons in October. However, the recent mountain pine beetle attack and associated salvage logging in central and southern portions of the province resulted in increased density of roads and thus increased hunter access to deer habitat, some of which was previously remote. In the future, this increased hunter access may result in elevated harvest levels and could challenge harvest management with respect to achieving management objectives (e.g., sex ratio) under a general open season. In some northern regions, where open habitat allows for greater visibility of mule deer, harvest is managed through a 30 day general open season in November.

Black-tailed deer numbers were estimated at 99,000 to 155,000 in 2011. In the late 2000s it is believed black-tailed deer numbers fluctuated in response to increased predation from wolves and cougars, and associated low elevation (<500m) second growth forest harvesting. Both cougar and wolf population levels were thought to have stabilized in the late 2000s albeit at a lower level than the early 2000's. This resulted in an apparent overall moderate increase in black-tailed deer along the south coast. There are concerns over low black-tailed deer numbers in parts of the mainland coast and coastal islands, particularly in areas of intensive industrial forestry operations, where a large percentage of the land base is privately owned. In these areas effective measures to conserve deer winter range and high quality habitat are considered below what is needed to maintain optimal populations. Estimated annual black-tailed deer buck

harvest was about 10,000 in the early 1990s and dropped to 4,000 to 6,000 from 1996-2011. Most management units have a 92 day any-buck season, which is one of the most liberal black-tailed deer seasons in North America. There are limited but increased opportunities for antlerless harvest, most of which occur in agricultural areas adjacent to forests. Increased hunter access to remote areas and extensive second growth logging activities in much of the black-tailed deer range may negatively impact deer numbers and pose challenges for the current harvest management especially if adequate winter ranges are not present. In areas of intensive forestry activity, increased road density (and associated animal sightability) was assumed to result in increased hunter success and predation rates with reduced amount of available winter range and refuge habitat.



Mule deer population trends in British Columbia

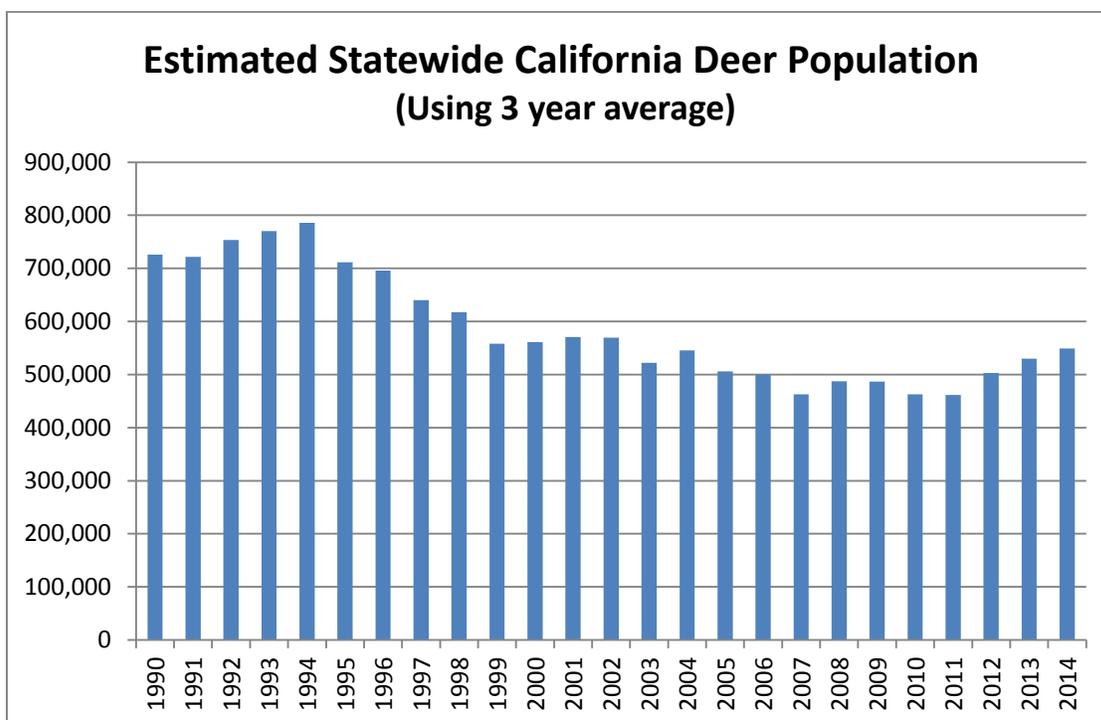


Black-tailed deer population trends in British Columbia.

-Gerry Kuzyk, British Columbia Ministry of Forestry, Lands and Nat. Res.

### **California**

California's deer population estimates are showing an overall stabilization of deer numbers following the recent decline that began in the early 1990's. Individual deer populations may not conform to this generalized trend due to the diversity of habitats and factors impacting deer and their ranges. Populations are estimated by hunt zone using a predictive population model that estimates post-harvest adult deer population levels. Deer population performance is measured using hunter success, buck ratio data, and over-winter fawn survival (where appropriate - mainly in migratory herds in areas that annually receive snow). Harvest is conservative in California, with 98% of deer taken being bucks. Hunter success statewide averaged about 17.4% in 2013.



-Mary Sommer, California Department of Fish and Wildlife

### **Colorado**

The statewide post-hunt population estimate for deer in 2013 is 391,000, compared to 408,000 in 2012. Mule deer populations in the far western portions of the state have declined. These declines are in some of the largest populations in the state. Sportsmen and women, landowners, and Colorado Parks and Wildlife (CPW) are concerned about declining mule deer populations in western Colorado. CPW has

undertaken a stakeholder process focusing on Western Slope Mule Deer Management Strategies.

Whereas there is reason for concern in many western herds, other herds in the state are performing well. The diversity of deer habitat types and environmental conditions around the state create considerable geographic variability in population performance. Many deer herds in the central and northern mountains are performing well, and population sizes as well as license numbers are increasing. Most plains deer populations are relatively stable.

Buck:doe ratios have been increasing in many herds demonstrating a response to buck license reductions following the difficult winter of 2007-2008. The average of individual herd management plan buck:doe ratio objectives for deer herds statewide is 31 bucks:100 does post-hunt. CPW conducts post-hunt herd inventories with helicopters to estimate the ratios of bucks:100 does and fawns:100 does. During the post-hunt herd inventories in 2013, biologists classified 64,700 deer and observed an average buck:doe ratio of 33:100, compared to 31:100 in 2012, and an average of 55 fawns:100 does. Based on these observed post-hunt buck:doe ratios and high hunter success, which was 49% for all rifle seasons in 2013, overall buck hunting continues to be good. This even applies to some of the declining herds where we lowered license numbers to achieve the buck:doe ratio objectives and maintain the opportunity to harvest mature males. In 2013 we issued 83,000 limited deer licenses, 97% of which could be drawn with 0 to 3 preference points.

-Andy Holland, Colorado Parks and Wildlife

### **Hawaii (Kauai Island: Introduced Black-tailed Deer)**

Since the introduction of the Oregon black-tailed deer to west Kauai in 1961, its range has expanded to south and east sections of the island. The deer population on Kauai's public hunting areas is estimated to be between 1000 to 1200 animals. Population estimates on private lands are not known at this time. Kauai uses the Aldous 1944 browse survey method which was modified to better fit Hawaiian environments. Below average rainfall brought on El Nino oscillations continue to persist throughout much of deer hunting range in 2014. Kauai is recovering from 2 major wildfires in 2012 which severely impacted much of the deer hunting range. The 2013 deer hunting season was again restricted to portions of the hunting range that recovered from the wildfires. DLNR plans to open all deer hunting units for the 2014 season as most of the burned areas have recovered sufficiently.

## Trends in harvest of black-tailed deer from 2003 to 2013 on Kauai public hunting areas.

	Buck	Doe	Total
2003	45	19	64
2004	39	12	51
2005	32	8	40
2006	32	2	34
2007	32	4	36
2008	51	2	53
2009	29	-	29
2010	26	-	26
2011	30	-	30
2012 <sup>1</sup>	4	-	4
2013	5	-	5

<sup>1</sup> Fire closure limited deer hunting season  
2013 – Fire closure limited deer hunting season

-Thomas Kaiakapu, Hawaii Division of Forestry and Wildlife

### **Idaho**

Idaho's mule deer population appears to be increasing over the last three years (2011-2013). The state is in the process of converting population monitoring to allow total population estimates through a combination of sightability, survival estimates, composition surveys and modeling. Although not all areas have yet been assessed, recent winter population levels have likely been between 230,000 and 290,000. Short- and long-term objectives are to increase mule deer numbers. Post-season buck ratios have mostly exceeded the statewide minimum objective of 15:100 does. However, December fawn:doe ratios are typically low (mid 50s to mid 60s), and fawn survival varies dramatically among years, from 30% to 78%.

Mule deer harvest in Idaho has been stable to increasing since the mid-1990s (average = 26,404 bucks) following a steep decline in harvest in the early 1990s. Recent years' license and tag sales data indicate a decline in nonresident hunters in Idaho. Percent bucks with 4-point or better antlers in the harvest has remained stable in the upper 30% range.

## Population Parameters from Idaho mule deer surveys, 2003-2013.

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Fawn:Doe <sup>1</sup>	60	56	63	61	56	60	61	61	55	63	67
Buck:Doe <sup>2</sup>	16	19	21	22	16	15	17	21	15	21	26
Fawn Survival <sup>3</sup>	0.69	0.54	0.76	0.31	0.69	0.30	0.52	0.68	0.32	0.61	0.78
Adult Doe Survival <sup>4</sup>	ND	ND	ND	0.87	0.89	0.90	0.90	0.95	0.82	0.95	0.97

<sup>1</sup> Fawn:Doe = fawns per 100 does

<sup>2</sup> Buck:Doe = bucks per 100 does

<sup>3</sup> Fawn Survival = overwinter fawn survival (December - May),

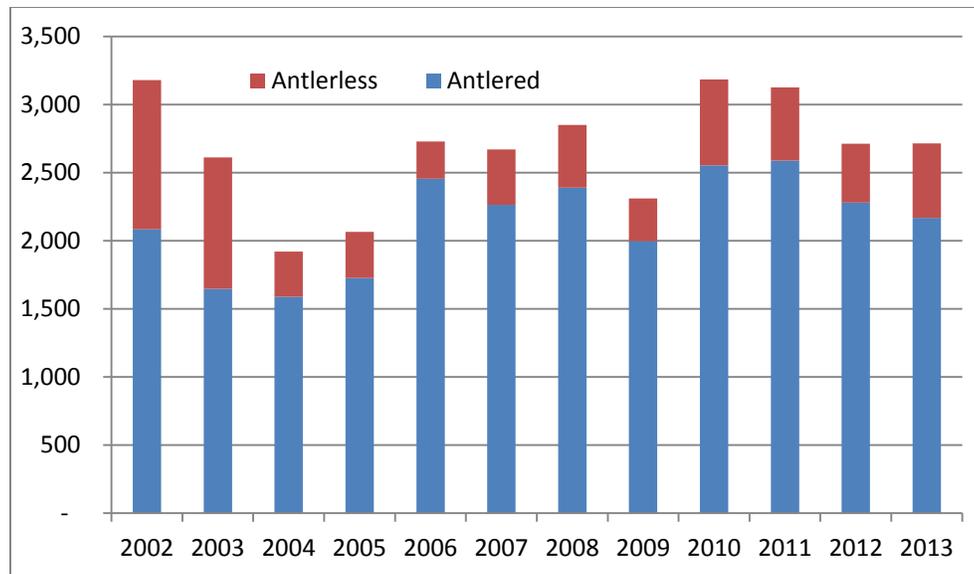
<sup>4</sup> Adult Doe Survival = annual survival (June - May)

-Toby Boudreau, Idaho Department of Fish and Game

### **Kansas**

Mule deer comprise a small portion of the deer population in Kansas; however, they receive enthusiastic support from deer hunters. Limited survey efforts are currently used to monitor mule deer populations. We have not estimated survival or reproductive rates. Distance sample surveys in 2013 estimated the density to be 1.8 mule deer/mile<sup>2</sup> (95% CI: 1.0 - 3.3) in the western portion of the range and approximately 0.2/mile<sup>2</sup> in the eastern portion of their distribution. That survey indicates a pre-firearm season population of approximately 50,000 mule deer.

Hunting regulations in Kansas have been liberal for white-tailed deer while being restrictive for mule deer. No buck-only permits and no mule deer-only permits are issued in Kansas. Mule deer may be taken on about 16% of the either sex deer permits issued in Kansas last year. Landowners received 52% of those permits. Each permit allowed only one deer to be taken and all permits that allowed the hunter to take a mule deer were valid for a white-tailed deer if the hunter decided to take a white-tailed deer instead of a mule deer. This practice generally takes hunters out of the field earlier in the season and takes pressure off mule deer while allowing approximately 19,000 people to have the potential to pursue mule deer. Hunters have taken an average of 2,673 mule deer/year during the last 12 years.



Trends in the number of mule deer harvested in Kansas, 2002 to 2013.

-Lloyd Fox, Kansas Department of Wildlife, Parks and Tourism

### **Montana**

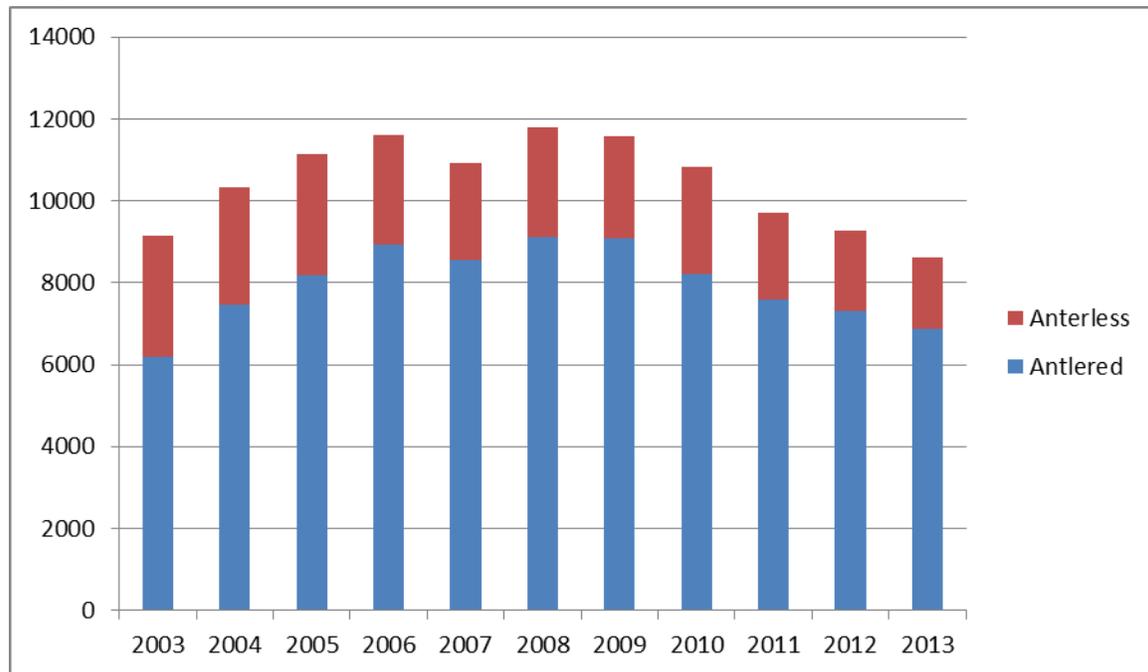
FWP does not collect data to estimate mule deer populations in Montana. Population growth and abundance is indexed with data from trend areas that represent populations in the state, and harvest information. Management is guided by those trend counts and harvest estimates. A population model that has harvest, fawn:doe and buck:doe ratios as inputs is used to estimate total populations by hunting district, however our confidence in those population estimates are low and that is why seasons are set based on trend counts and trends in harvest estimates from previous years.

Mule deer in many of the trend areas across Montana have experienced significant declines in observed numbers since 2003. In Montana the most recent peak in antlered harvest was observed in 2003 when 44,528 antlered animals were harvested. Between 2003 and 2011 antlered harvest dropped 34.2% to 28,985 antlered animals. Since 2011 we have seen a slight improvement in harvest to 31,456 antlered animals killed, although this number is still 32% below the long-term average (1960-2012) of 46,010 animals. Mule deer populations in western Montana continue to perform poorly and declines there for the most part are much higher than declines in eastern Montana. Harvest management responses have included conservative adjustments to general license harvest opportunity (less either sex season types) and dramatic reductions in antlerless licenses. Harvest of antlerless mule deer declined 72.7%, from 23,241 in 2003 to 6,338 in 2013. There will be no either sex season types in the state in 2014 and very few antlerless only deer licenses will be available.

-Jay Newell, Montana Fish, Wildlife and Parks Department

### **Nebraska**

Harvest of mule deer bucks was 6,876 in 2013, down 6% from 2012 and down 25% from the record high of 9,115 in 2008. Populations in most units are now comparable to the levels of the 1990's. Harvest restrictions and a general population decline over the past five years due to drought, predation and disease (EHD and meningeal worm) are the primary cause of current harvest reductions. Antlerless harvest is the lowest recorded since 1982. Additional restrictions in 2014 will result in further reductions in antlerless harvest.



Trends in mule deer harvested in Nebraska 2003-2013.

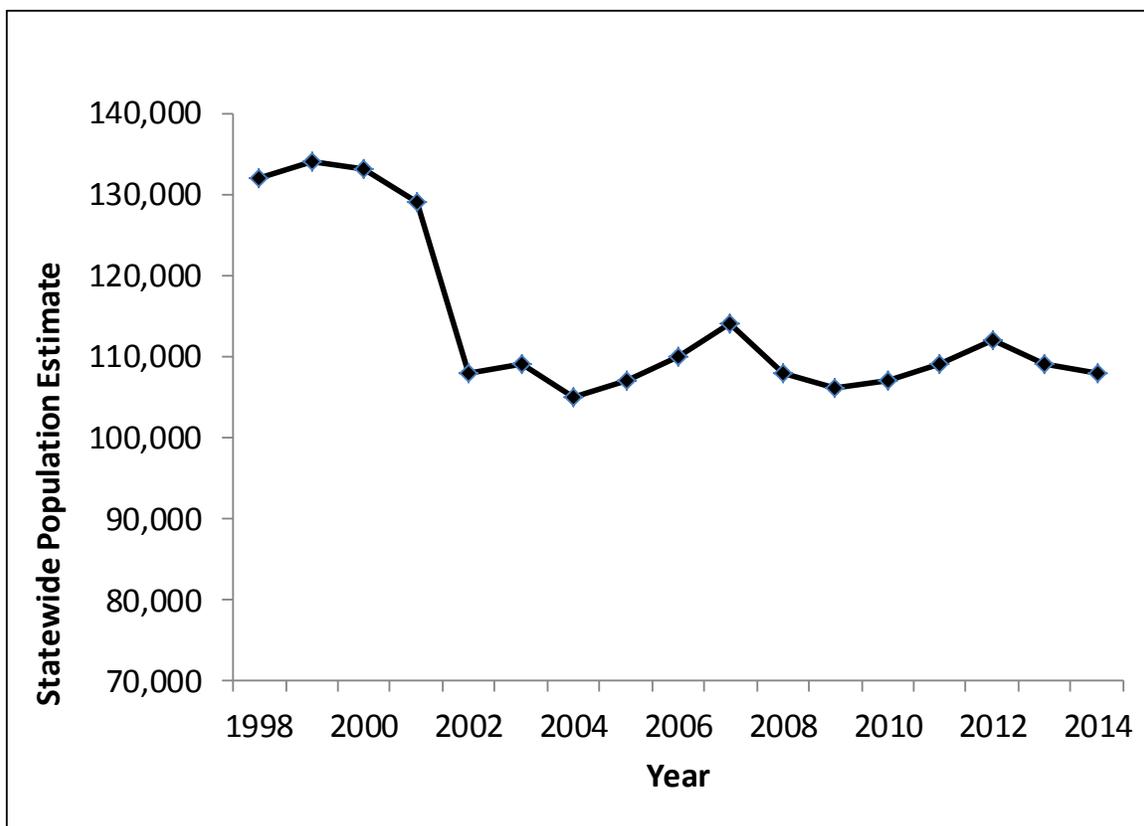
-Kit Hams, Nebraska Game and Parks Department

### **Nevada**

Nevada's mule deer populations have been stable to slightly declining over the past two years. The 2014 statewide mule deer population is estimated to be approximately 108,000, which is slightly down from the estimated 109,000 in 2013. After sizeable increases in deer tag quotas were realized during the 2011-2013 hunting seasons, the 2013 post-season survey revealed a management objective of 30 bucks:100 does was finally met. Maintaining a healthy buck ratio will be even more important in the persistent drought conditions Nevada has been experiencing over the past several years.

The 2013 total statewide mule deer tag quota of 22,656 was 6.5% lower than the 24,257 set in 2012. The decrease in quota and tag sales resulted in a total deer harvest of 9,367 compared to 10,112 deer harvested in 2012. Of the 9,364 deer harvested in 2013, 8,230 were bucks and 975 were does. The 2013 statewide hunter success for all deer hunters was nearly 44%, up from the 42% hunter success observed during 2012.

The 2013 aerial post-season survey effort was down from the 2012 survey with approximately 21,300 mule deer classified statewide compared to 34,000 in 2012, and 27,000 deer classified in 2010. Fawn production was slightly down during 2013 with 51 fawns:100 does counted in the late fall/early winter statewide survey, likely a result of persistent drought conditions across much of the state. The 2013 spring deer surveys classified 27,888 deer compared to 33,346 in spring 2012. The survey results showed a slight improvement over the 2012 survey with 33 fawns:100 adults observed, likely due to very mild winter conditions. However, combined with the observed decline in fall fawn ratios, overall this equates to an approximate 17% over-winter fawn loss across the state. Population estimates across the state will continue to remain static given the poor recruitment observed during the past several years, which is undoubtedly related to persistent drought and degraded rangeland conditions.



Trends in statewide mule deer population in Nevada, 1998 to 2014.

-Cody Schroeder, Nevada Department of Wildlife

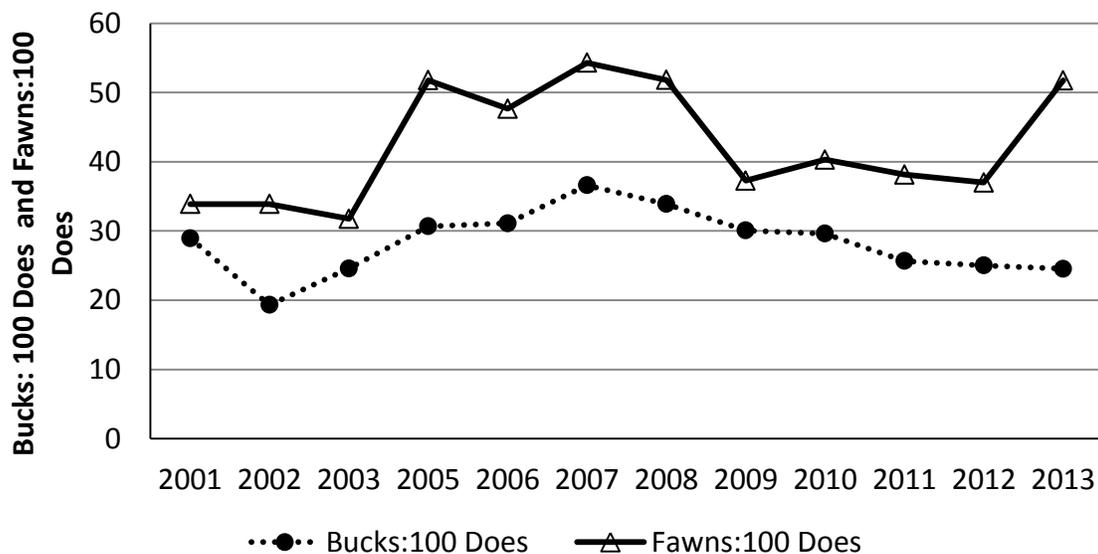
### **New Mexico**

Observations suggest that mule deer populations throughout most of New Mexico have experienced a steady decline over recent decades. Annual winter surveys are conducted post-season to track sex ratios and fawn survival throughout the state. Statewide, the proportion of bucks in the population has declined slightly from a high of 37 bucks:100 does in 2007 down to 25 bucks:100 does in 2013. Fawn survival to

approximately 6 months of age averaged below 40 fawns:100 does for the four years preceding 2013, where an uptick to 52 fawns:100 does. Declines in mule deer abundance in recent years may be related to low fawn survival driven largely by drought and resulting poor habitat conditions. Adult survival during this period has also potentially been impacted by predation and poor habitat conditions. Given low long-term fawn survival, the slight increase in fawn survival in 2013 is unlikely to have significant impacts on overall deer abundance.

New Mexico implemented mandatory harvest reporting for all hunters starting in 2006. An average of 11,118 deer were harvested annually from 2006-2012. Total harvest in 2013 fell below the average at 8,633 deer. Presently mule deer and white-tailed deer harvest are not reported separately. New Mexico allocates the majority of deer licenses through a public draw, and 99% of the harvest is limited to bucks only to minimize population impacts. Regardless, hunter success and satisfaction ratings have exhibited a downward trend in recent years. Approximately 25% of hunters going afield harvested a deer during the 2013-2014 season. The state is considering reducing the number of licenses issued in many areas for the upcoming regulation cycle. The goal of the license reduction is to balance the number of licenses with the number of hunters afield to increase success rates and to potentially help balance sex ratios.

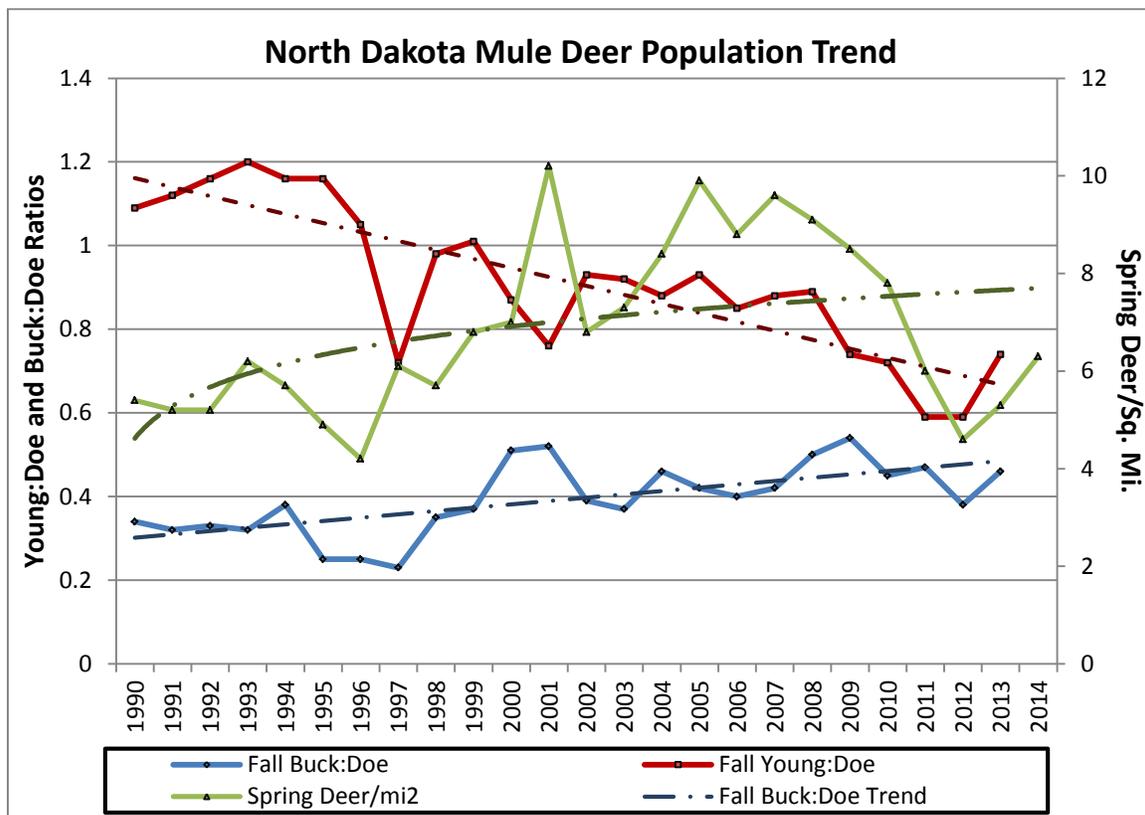
Many efforts are underway in New Mexico to help improve declining deer populations. The New Mexico Department of Game and Fish (Department) along with cooperating partners is presently implementing habitat management that will benefit mule deer on approximately 100,000 acres statewide. The Department also carried out a series of highly-successful mule deer translocations this year. 183 deer in total were captured and translocated. These efforts are part of a management program to alleviate overabundant deer issues while helping to bolster low deer populations in select areas of the state.



-Ryan Darr, New Mexico Department of Game and Fish

**North Dakota**

From 2008-2012, numbers of mule deer declined due to 3 consecutive severe winters (2008 to 2010) and poor fawn production following these winters. This resulted in the four lowest fawn:doe ratios since the late 1950s. In response to the declining trend in numbers of mule deer, antlerless licenses were not issued for the badlands deer units in 2012-2014. The combination of eliminating the antlerless harvest and milder winter conditions in 2011 -2013 over much of the badlands has led to healthy increases in numbers of mule deer during 2013 and 2014. The 2014 spring index was 19% higher than in 2013 and only 7% below the long-term average.



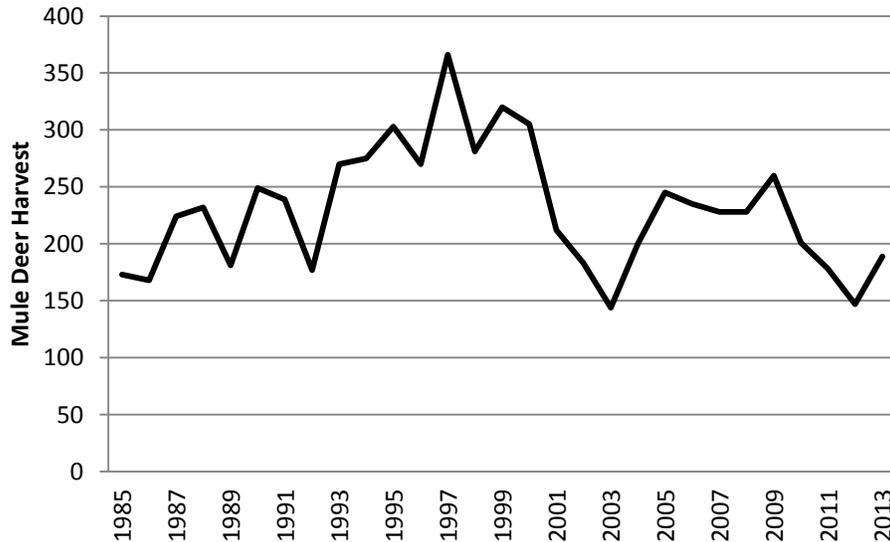
Mule deer population trends in North Dakota, 1991 to 2013.

- Bruce Stillings, North Dakota Game and Fish Department

**Oklahoma**

Mule deer in Oklahoma inhabit a very small portion of the state, primarily in the three counties in the panhandle with scattered pockets in the main body of the state. The mule deer that are here are mostly found on private land. The result is that very little opportunity exists to hunt mule deer.

Mule deer populations have fluctuated with drought conditions. At this time we do not survey populations, however biologists and hunters have reported seeing fewer animals in recent years. The only data we have to corroborate this anecdotal information is harvest data. Harvest was fairly high, for Oklahoma, from 1993 to 2000 and then fell off sharply. Harvest rebounded in 2004 to pre-1993 levels and fell off again in 2009. The most recent decline is likely attributed to severe drought conditions in the panhandle.



In 2013, 189 mule deer were harvested. Oklahoma does not have a separate mule deer license. They are considered as part of the season bag limit for the general deer season. However, we do provide some protection for mule deer by not allowing antlerless deer to be harvested during any firearms season. As a result, we have a very low doe harvest rate, with bucks making up 95% of the harvest in the 2013 season.

-Erik Bartholomew, Oklahoma Department of Wildlife Conservation

### Oregon

Both mule deer and black-tailed deer are substantially below the long-term statewide management objectives and benchmarks. Oregon's estimated mule deer population continues to hover around 222,000–226,000. Because of the difficulties with surveying black-tailed deer we have been unable to develop annual population estimates. However, in 1998 the black-tailed deer population was estimated at 387,000, declining to 320,000 in 2004; the population seems to have been relatively stable since that time.

Efforts to more rigorously estimate deer populations in Oregon continue. The Oregon Department of Fish and Wildlife is attempting to implement the mark-resight estimator developed by Brinkman et al. (2010) to estimate black-tailed deer populations at a unit-wide scale. Over 4,000 samples have been collected in 4 management units. Lab analyses are currently being finalized. Additionally, 110 deer have been radio-collared in an effort to better understand habit use and movement patterns.

Beginning winter 2014–2015, Oregon is embarking on a process of radio-collaring mule deer across much of their eastern Oregon distribution to refine herd range boundaries for data collection and monitoring. Using results of the recently completed south-central mule deer study, and pending information from the new collaring effort, the Department is also developing a rotation for application of sampling based population estimators (quadrat surveys, sightability surveys, distance surveys) coupled with a new modeling approach to better track populations.

Oregon's Mule Deer Initiative activities are complete in the initial management units. Analyses of these activities are currently in process and results should become available during the next year.

-Don Whittaker, Oregon Department of Fish and Wildlife

### **Saskatchewan**

Mule deer populations continue to fall below long term averages in several core areas throughout Saskatchewan. Populations continue to recover from the winter of 2012-13 which resulted in mule deer mortality in many Wildlife Managements Zones across the province. As a result, license availability for the 2014/15 season will be reduced for both antlerless and either-sex components of the population. Provincial hunter harvest success through the Saskatchewan Big Game Draw in 2013/14 was 66% for either-sex licenses and 69% for antlerless licenses. Surveys completed this fall will be used to further assess the population status.

- Travis Williams, Saskatchewan Ministry of Environment-

### **South Dakota**

Mule deer populations are currently below population objective in all prairie deer management units across the State of South Dakota. Populations in the Black Hills region are also below objective but remain stable despite restricted harvest regulations promulgated several years ago. Current population models estimate 8,700 (5,700-11,800) mule deer in the Black Hills and 87,500 (59,100-115,900) on the prairie. Record high harvest rates in the early to mid-2000s followed by 3 consecutive, severe winters in 2009-11 decreased populations throughout their range. Winter losses were reported by the public and Department staff in numerous locations, and increased rates of over-winter mortality were observed in radio-collared mule deer. Record drought conditions also covered most of South Dakota in 2012. Furthermore, lion populations in the Black Hills reached densities not recorded since their return from near extirpation, and anecdotal accounts suggest coyote populations on the prairies have rebounded after severe mange outbreaks in the early 2000s. Pre-season recruitment estimates have shown declining trends over the past 5 years, with a record low statewide average of 56 mule deer fawns:100 does in 2013. Pre-season sex ratios were 32 bucks per 100 does (44:100 in 2012). Hunting demand remains high despite low deer populations, and approximately 7,000 mule deer were harvested in 2013. Substantial hunting season changes will occur in 2014 to address low populations, including further reductions of

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prairie hunting deer tags (56% reduction) and no mule deer antlerless firearm or archery/muzzleloader licenses will be available. Loss of land enrolled in the Conservation Reserve Program and other grassland/rangeland-to-agriculture conversion continues to be a concern for mule deer management.

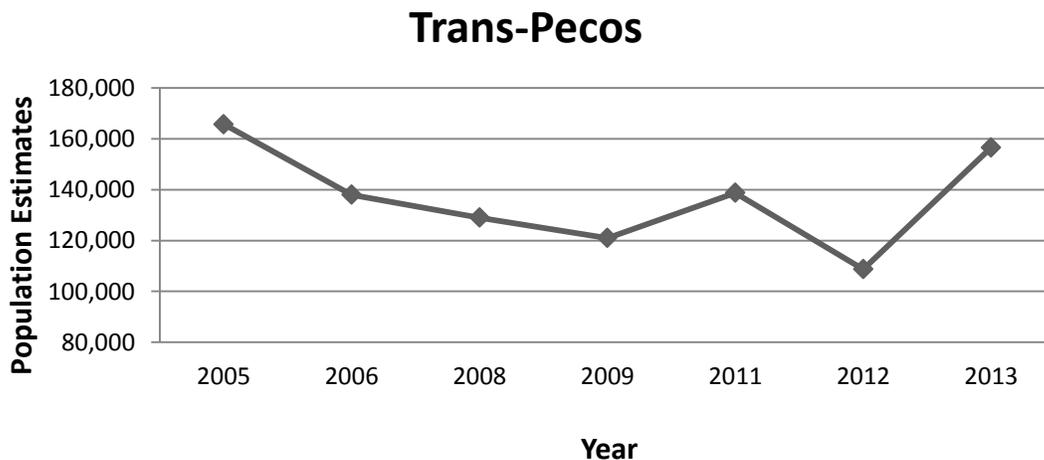
-Andy Lindbloom, South Dakota Department Game and Fish

### **Texas**

In 2004, Texas Parks and Wildlife Department (TPWD) went through a comprehensive science review of the Department's survey methodologies by the Wildlife Management Institute (WMI). This critical review recommended TPWD to improve survey techniques for deer. Therefore, TPWD revamped survey methodologies for both mule and white-tailed deer based upon recommendations from WMI. These changes were implemented during the 2005 survey season. In addition, TPWD recently conducted research to develop a mule deer sightability model to improve population estimates. The mule deer sightability model was initiated in 2011. Currently, TPWD conducts post-season helicopter surveys for mule deer utilizing a stratified random sampling design within monitoring units.

### *Trans-Pecos*

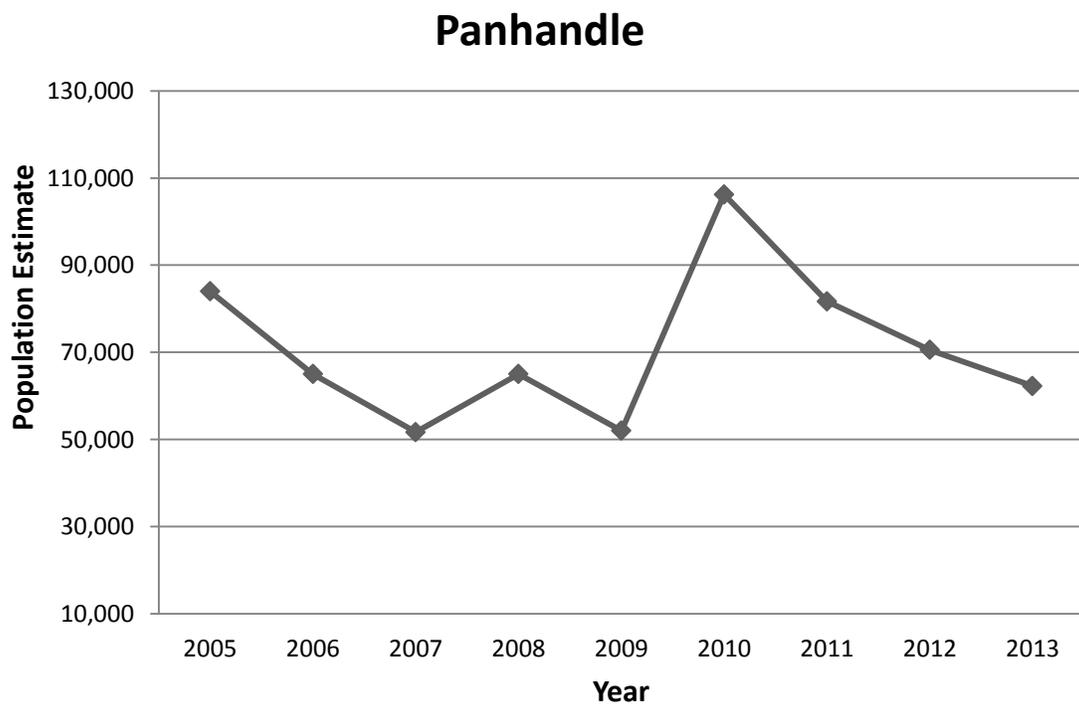
In general, the Trans-Pecos population is trending downward primarily from extended and expansive drought conditions during most survey years after 2005. However, the 2013 survey estimates (156,566) indicated a 44% increase from 2012 (108,739), primarily from improved range conditions and fawn production and recruitment. We did not survey in 2007 and 2010. The estimated 2013 fawn crop of 47 fawns:100 does was better than the 2012 estimate of 32 and slightly above the long-term average (40 to 45). Improved range conditions in parts of the region helped increase fawn production in 2013. The sex ratio for 2013 was 34 bucks:100 does, and has decreased since 2005. This could be because extended drought conditions increased post-rut mortality among bucks.



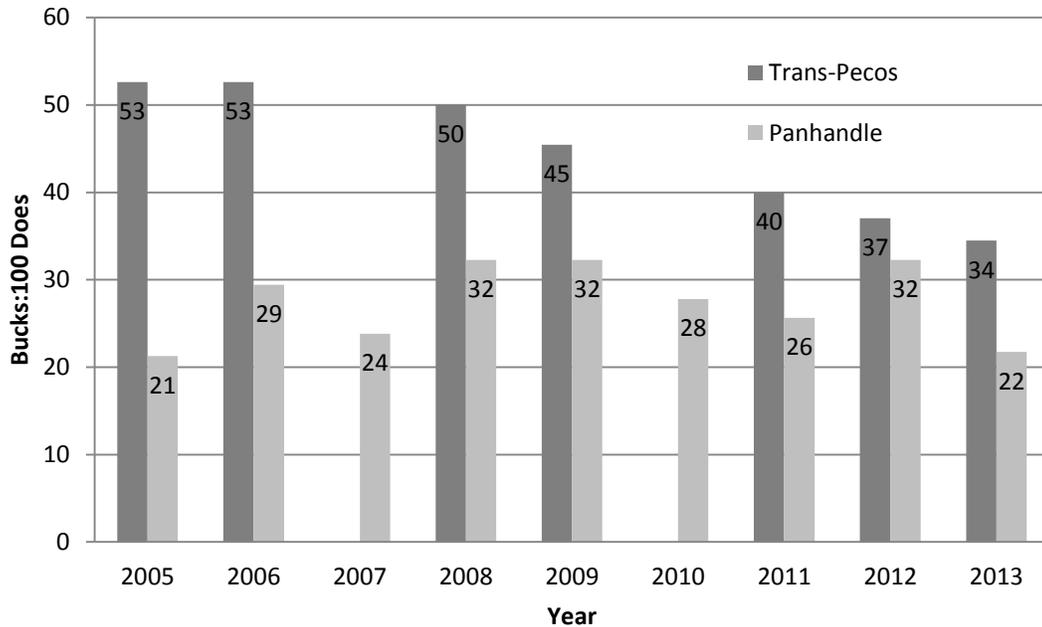
Trends in mule deer population estimates in the Texas Trans-Pecos, 2005 to 2013.

### *Panhandle*

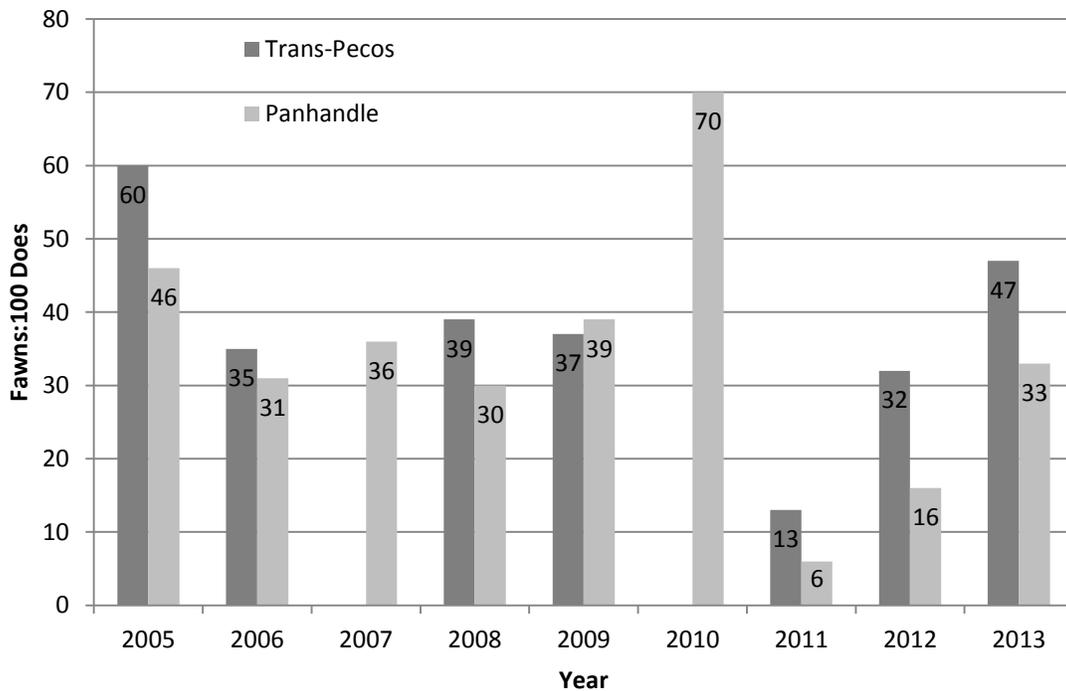
The Panhandle population decreased from 2011 (81,705) to 2013 (62,268). However, data from 2005 to 2012 suggest a stable to increasing trend in Panhandle mule deer numbers. Even with access to supplemental food from agricultural production, the mule deer population has been significantly affected by historic drought conditions. In fact, fawn crops have been severely impacted by poor range conditions, with fawn crop estimates of only 6 fawns:100 does in 2011 and 16 fawns:100 does in 2012. Although, fawn production in 2013 was significantly better than the previous 2 years (33 fawns:100 does) and similar to the long-term average fawn crop of about 35. Fawn production is usually more stable than that in the Trans-Pecos, but over the last 4 years it has experienced extreme fluctuations. The sex ratio for 2013 was 22 buck:100 does. Sex ratios have varied from 21 to 32 buck:100 does since post-season surveys have been initiated in 2005. Sex ratio data indicate a higher harvest rate on mule deer bucks than that in the Trans-Pecos, but in most years the post-season sex ratio has been above 21 bucks:100 does.



Trends in mule deer population estimates in the Texas Pandhandle, 2005 to 2013.



Trends in the number of mule deer bucks per 100 does in the Texas Panhandle and Trans-Pecos area, 2005 to 2013.

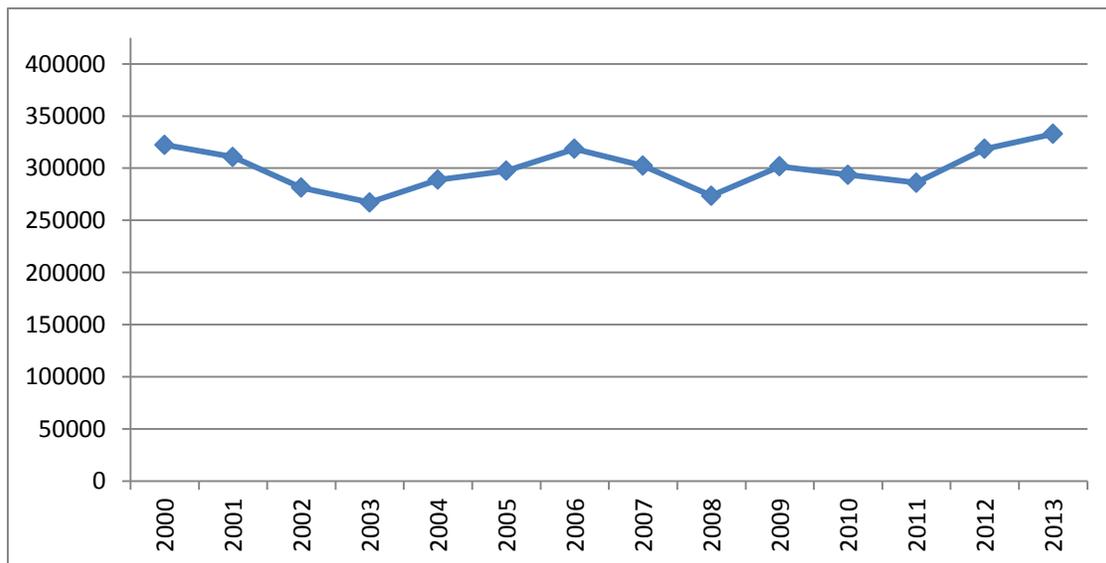


Trends in the number of mule deer fawns per doe in the Texas Panhandle and Trans-Pecos area, 2005 to 2013.

-Shawn Gray, Texas Parks and Wildlife Department

### Utah

Mule deer populations in Utah had the same trends as surrounding states. Two pronounced peaks in populations occurred in the mid-1950's and mid-1980's. Although no reliable population estimates exist there were likely close to 600,000 mule deer in Utah during those peak years. Above average winter conditions in 1992 caused a marked decline in mule deer populations in Utah, and populations fell to about 250,000 animals. Since that time, deer populations have recovered slightly and have maintained at a level around 300,000 animals, with some weather-related declines and rebounds. Since 2002 population estimates have been derived using population models. Prior to 2002, population estimates were a best guess based on harvest data. Harvest estimates are derived from a randomized phone survey. We have a 2014 objective of 350,000 deer and a long term objective of 422,400 deer. The current estimate of mule deer in Utah is 332,900.



Utah mule deer population estimates 2000 to 2013

-Justin Shannon, Utah Division of Wildlife Resources

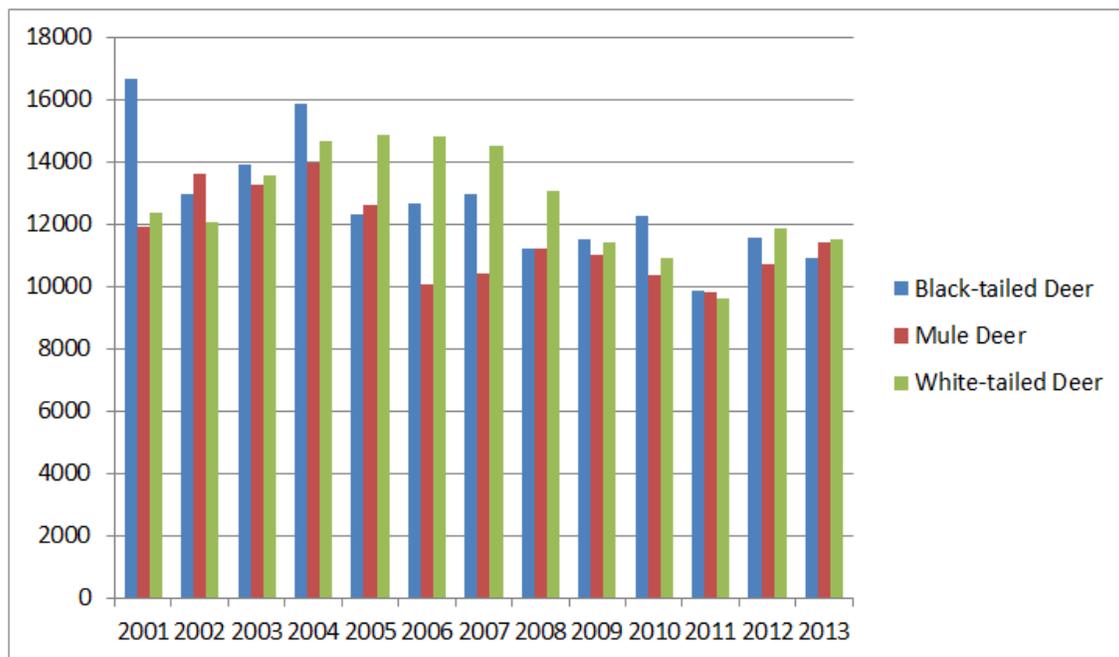
### Washington

Washington state mule deer and black-tailed deer populations have rebounded and are doing well, with some exceptions. In north-central Washington (Okanogan, Chelan, and Douglas counties) mule deer seem to be at the capacity that the habitat will support and continue to respond positively to habitat improvements on WDFW Wildlife Management Areas, state forest, and federal forest. Mild to average winters the last 4 years allowed for better over-winter survival and strong recruitment. In the northeast, mule deer numbers have climbed slightly. More habitat enhancement (e.g., prescribed

burns, thinning) is being focused on public lands that would benefit mule deer in the Northeast. The Palouse and the Columbia Basin mule deer populations remain stable.

Revitalized survey work in the foothills of the Blue Mountains showed robust to increasing mule deer populations associated with private agricultural land. Summers are a critical time of year for deer in these portions of the state. Summers in these 3 areas have been consistently dry and hot. WDFW is anxiously awaiting how the 2014 summer will unfold. Wildfires have affected habitat slightly to benefit mule deer by setting back succession and promoting early successional species. South-central mule deer populations (Yakima and Kittitas counties) continue to show resurgence after recent declines attributed to hair loss caused by exotic lice. Deer numbers were still below what they were prior to the occurrence of the hair loss.

The mule deer/black-tailed deer transitional populations along the Columbia River gorge on the state's southern border were stable, with harvest and post-hunt buck numbers responding to more restrictive hunting season structures that were implemented recently. Black-tailed deer in western Washington were stable. Some localized segments of the population vary up and down due to forest production rotations. There is still potential to increase black-tailed deer numbers if private and public forests were managed for an increase in early successional habitat. Habitat loss due to human population increase is also a factor for black-tailed deer in western Washington.

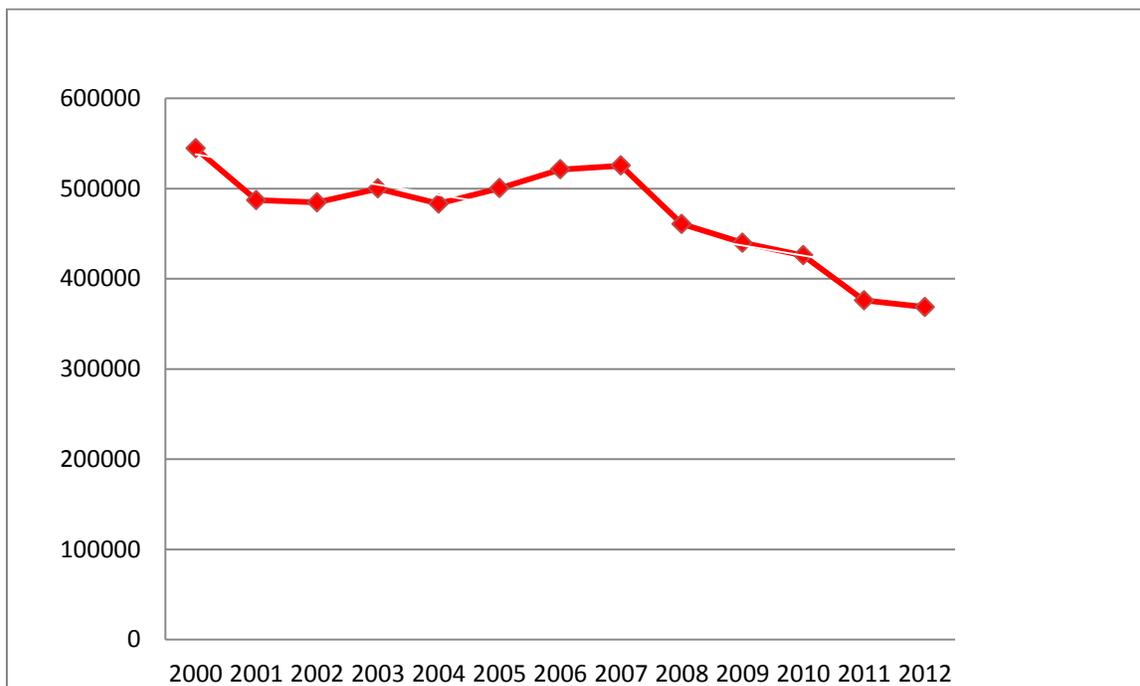


**Estimated Washington deer harvest by deer species/subspecies for 2001 through 2013.**

-Jerry Nelson, Washington Department of Fish and Wildlife

### **Wyoming**

Mule deer populations throughout Wyoming have declined since the early 1990s. It is apparent, given declining production of mule deer fawns starting in the late 1980s, populations were responding in a density-dependent fashion to decreasing habitat availability and/or quality. Over the past 30 years, fawn productivity, on average, has decreased statewide by about 20% and has been below 66 fawns:100 does 13 times. Throughout Wyoming, mule deer populations have declined by an estimated 176,000 (32%) mule deer since 2000. After the 2012 hunting season, it was estimated there were 369,000 mule deer in the state. This is 35% below the statewide objective of 564,650 mule deer.



Trends in the Wyoming statewide mule deer population estimate, 1990 to 2011.

-Daryl Lutz, Wyoming Game and Fish Department

### **Yukon**

There has been no formal inventory work on mule deer in Yukon although an occupancy modeling approach is being piloted in 2014/2015. Trends in abundance and distribution are monitored primarily through sighting and motor vehicle collision reports. Numbers and distribution have generally been on the upswing since first reports in the early 1920's but there are still likely fewer than 1,000 territory-wide.

The first deer hunting season was implemented in 2006. Licensed hunters in Yukon must apply for a male-only permit through a lottery system. Interest in the deer hunt continues to be high with 400 to 500 hunters applying for 10 permits issued each year. As of 2010, two additional permits have been available annually to young hunters. First Nation beneficiaries are entitled to harvest deer under their subsistence rights as of

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the effective date of their settled final agreements. The licensed harvest in 2012 was 4, relatively consistent with the annual licensed harvest ranging between 4 and 8 deer since the hunt was initiated.

-Sophie Czetwertynski, Yukon Department of Environment

### **Acknowledgements**

Information in this report was provided by MDWG members from the 23 Western Association of Fish and Wildlife Agencies (WAFWA) and compiled by Gerry Kuzyk and Jim Heffelfinger. Contributors are listed after their respective state and province report. We would also like to thanks Greg Sheehan, our WAFWA Director Sponsor and Miles Moretti of the Mule Deer Foundation for their support.