

RANGE-WIDE STATUS OF MULE DEER AND BLACK-TAILED DEER IN 2013.

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.

Figure 1. Range and current sub-specific designations for black-tailed and mule deer in North America.



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Table 1. Range-wide estimation of population size, harvest, and hunter numbers of mule deer provided by member agencies of WAFWA, 2013.

	Estimated Population ¹	Total Harvest	% males in Harvest	Hunter Numbers
Alberta	140,000	11,675	53%	22,263
Arizona	75,000 - 120,000	7,326	99%	61,118
British Columbia	115,000 - 205,000	14,205	84%	48,169
California ³	400,000 - 500,000	32,954	98%	174,208
Colorado ⁴	408,000	33,086	74%	73,705
Idaho	170,000 - 200,000	18,466	81%	71,078
Kansas	35,000	2,713	84%	19,467
Montana	Unknown	37,793	82%	165,473
Nebraska ⁵	75,000	9,265	79%	15,000
Nevada	106,000	10,112	89%	24,257
New Mexico	80,000 - 90,000	9,400	99%	34,500
North Dakota ⁶	13,260 (Badlands)	2,056	74%	6,122
Oklahoma	2,000	147	96%	472
Oregon	200,000 - 225,000	23,433	91%	66,719
Saskatchewan	30,000 - 60,000	6,500	NA	10,553
South Dakota ⁷	73,000 - 130,000	9,300	60%	71,557
Texas	150,000 – 210,000	10,261	100%	18,976
Utah	318,550	29,411	94%	79,066
Washington ⁸	85,000 - 95,000	10,599	83%	120,082
Wyoming	376,000	27,720	80%	50,737
Yukon	1,000	4	100%	12

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

²All data presented are from the most recent year available.

³Black-tailed and mule deer numbers combined.

⁴Population estimate, harvest, and hunters include white-tailed deer which cannot be easily removed and make up less than 5%.

⁵ Number of mule deer hunters is difficult to estimate because many mule deer permits allow take of either species.

⁶ Population estimate only for the Badlands, which is the primary range.

⁷ Hunter number includes whitetail hunters.

⁸Total 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, 2013.

	Estimated Population ¹	Total Harvest	% males in Harvest	Hunter Numbers
Alaska		17,230	80%	11,744
British Columbia	99,000 - 155,000	5,949	92%	9,497
Hawaii ³	1,000-1,200	30	100%	
Oregon	300,000 - 320,000	19,703	86%	98,290
Washington	90,000 - 110,000	12,551	83%	120,082

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

²All data presented are from the most recent year available.

³Population 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

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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. Since then we have experienced average to below average winters across most of the region, and believe our deer populations are recovering in most areas, with hunter harvest and effort appearing to rebound as well. However, deer densities 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. Currently research is underway 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 numbers are believed to have remained low; to relieve pressure the deer hunting season was closed by emergency order in early December of 2012 for the remainder of the deer hunting season. In GMU 8, the deer population of the Kodiak archipelago declined due to a severe winter with near-record snowfall in 2011 to 2012. Deer mortality was greatest on the northern portion of Kodiak and the western side of Afognak Island. Deer populations are likely still rebounding, but the winter of 2012 to 2013 was much milder and over-winter survival in all areas was very good.

-Karin McCoy, Alaska Department of Fish and Game

Alberta

The southern parts of the province are still recovering from die-offs associated with the severe winter of 2010 to 2011. The last two winters have been mild in the south, but central and northern Alberta saw deep snow conditions this past winter which affected all ungulates, including mule deer populations. In the south, lack of snow cover continues to limit the number of wildlife management units (WMU's) where winter aerial surveys could be conducted, so it has been difficult to determine whether populations have recovered. Because of this, wildlife managers applied conservative estimates for mule deer populations when establishing permit numbers for the 2013 hunting season. Overall, antlered mule deer permits were adjusted up by only 20% from last year. Even with effects of winter weather on ungulates over the last couple

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years, Alberta continues to provide great hunting experiences for mule deer for residents and non-residents alike.

The current provincial population estimate is approximately 140,000 mule deer. This will provide approximately 11,400 hunting opportunities this fall for residents for antlered mule deer (64,800 hunters applied last year) and approximately 17,000 hunting opportunities for residents for antlerless mule deer (25,500 hunters applied last year). Approximately 1,500 opportunities are also available for non-residents through outfitter-guide allocations.

-Kim Morton, Alberta Fish and Wildlife Division

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 by about 10%. 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.

-Brian Wakeling, Arizona Game and Fish Department

British Columbia

Mule deer numbers declined in the late 1990's largely due to winter conditions but since then have recovered to a 2011 provincial estimate of 115,000 to 205,000. Populations on the northern edge of the range vary with winter severity. Currently, most of the province has stable to increasing mule deer numbers while some areas in southeast BC have recently experienced declining mule deer populations. Mule deer surveys are generally focused to obtain post-hunt buck:doe ratios and overwinter fawn survival.

Black-tailed deer numbers declined during the early to mid-2000's. We suspect this was mainly due to increased predation from cougars combined with factors related to anthropogenic disturbance. Both cougar and wolf population levels seem to have

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stabilized at lower densities resulting in a subsequent general increase in deer numbers in parts of the province. There is still some concern for low black-tailed deer numbers on parts of the mainland coast. Black-tailed deer surveys were conducted to obtain pre-hunt buck:doe ratios and overwinter fawn survival. The 2011 provincial estimate for black-tailed deer was 99,000 to 155,000.

Figure 2. Mule deer population trends in British Columbia

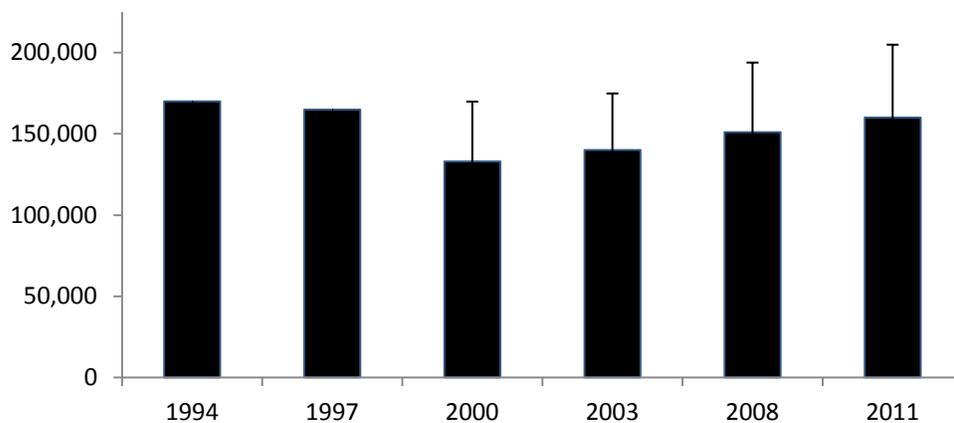
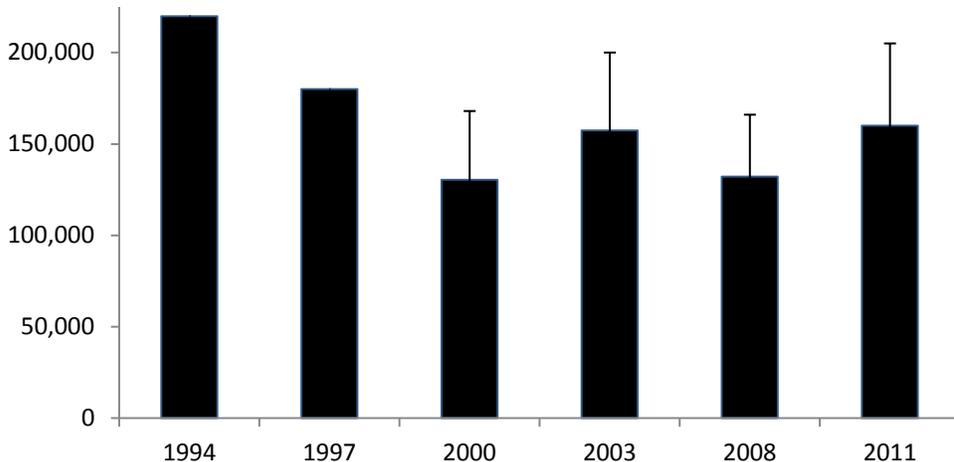


Figure 3. Black-tailed deer population trends in British Columbia.



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

California

California's deer population has been stable to slightly declining for at least the last 20 years. Most apparent is the reduction in migratory deer populations in the northern and eastern parts of the state. Some areas in the state with resident deer populations are

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actually experiencing increases in deer populations with resultant deer depredation-vehicle collision issues. The overall harvest trend has been decreasing. This trend may be as much a result of changes in hunter numbers as changes in deer populations. The statewide average hunter success rate was 18.9% in 2012. Last year's experience with a radio collared gray wolf from Oregon moving into California (the last confirmed wolf in California was in 1924) has ignited a new interest in deer populations from hunters, but the impact on future deer management remains to be determined. A fairly strong anti-hunting or anti-management segment of California's population remains very active and is increasingly affecting management decisions.

-Mary Sommer, California Department of Fish and Wildlife

Colorado

The statewide post-hunt population estimate for deer in 2012 was 408,000, compared to 418,000 in 2011. Mule deer populations in the far western portions of the state have declined. These declines are in some of the largest populations we have. Sportsmen and women, landowners, and Colorado Parks and Wildlife (CPW) are concerned about declining mule deer populations in western Colorado. CPW is in the process of developing a stakeholder process focusing on deer management.

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. Most deer herds in the central and northern mountains are performing well, and population sizes as well as license numbers are increasing. We are encouraged by increasing buck:doe ratios post-hunt 2012 in several herds. In 2013, we are starting to restore quotas that we reduced in response to declines from the winter of 2007/2008 in herds that are recovering and/or are above population and buck:doe ratio objectives. Most plains deer populations are relatively stable. The average of buck:doe ratio objectives for deer herds statewide is 30 bucks:100 does. 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 2012, biologists classified 69,400 deer and observed an average buck:doe ratio of 30.7:100, compared to 29.3:100 in 2011. Based on these observed post-hunt buck:doe ratios and high hunter success, which was 50% for all rifle seasons in 2012, overall buck hunting continues to be good for those that are able to draw a tag. This good hunting 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.

-Andy Holland, Colorado Division of 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. Dry conditions brought on by periodic El Nino oscillations have persisted throughout much of deer hunting range during the past decade. There were 2 major wildland fires last year which severely affected much of the deer hunting range. Hunting seasons have been scaled back due to the ongoing fire closure declaration.

Table 4. Trends in harvest of black-tailed deer from 2003 to 2012 on Kauai public hunting areas, Hawaii.

	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 ¹	4	-	4

¹ Fire closure limited deer hunting season

-Thomas Kaiakapu, Hawaii Division of Forestry and Wildlife

Idaho

Idaho's mule deer population appears to be relatively stable over the last decade. 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 170,000 and 200,000. 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

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typically low (mid 1950s to mid 1960s), and fawn survival varies dramatically among years, from 30% to 76%.

Mule deer harvest in Idaho has been approximately stable since the mid-1990s (average = 19,310 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.

Table 5. Population Parameters from Idaho mule deer surveys, 2002-2012.

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Fawn:Doe ¹	61	60	56	63	61	56	60	61	61	55	63
Buck:Doe ²	17	16	19	21	22	16	15	17	21	15	21
Fawn Survival ³	0.40	0.69	0.54	0.76	0.31	0.69	0.30	0.52	0.68	0.32	0.61
Adult Doe Survival ⁴	ND	ND	ND	ND	0.87	0.89	0.90	0.90	0.95	0.82	0.95

¹ Fawn:Doe = fawns per 100 does

² Buck:Doe = bucks per 100 does

³ Fawn Survival = overwinter fawn survival (December - May),

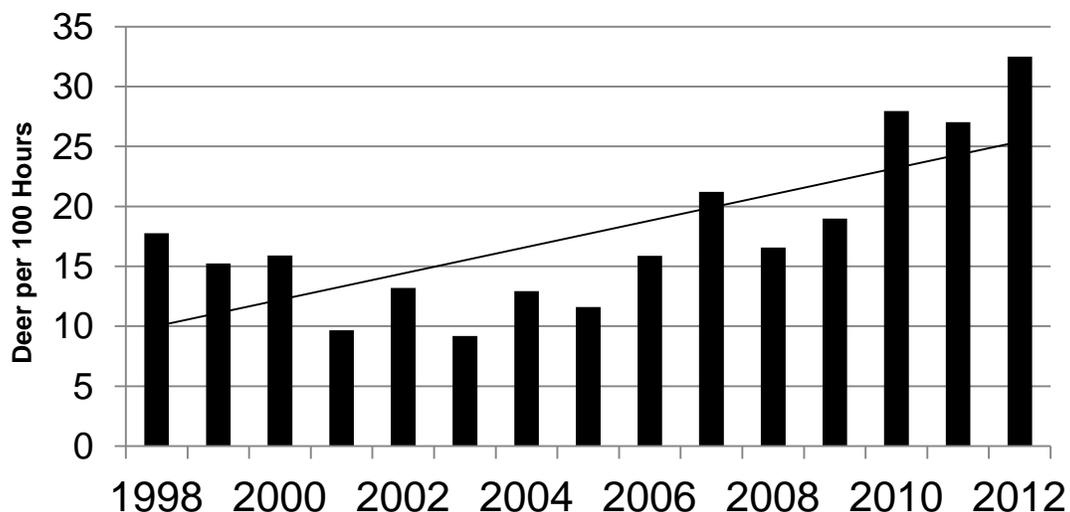
⁴ Adult Doe Survival = annual survival (June - May)

-Toby Boudreau, Idaho Department of Fish and Game

Kansas

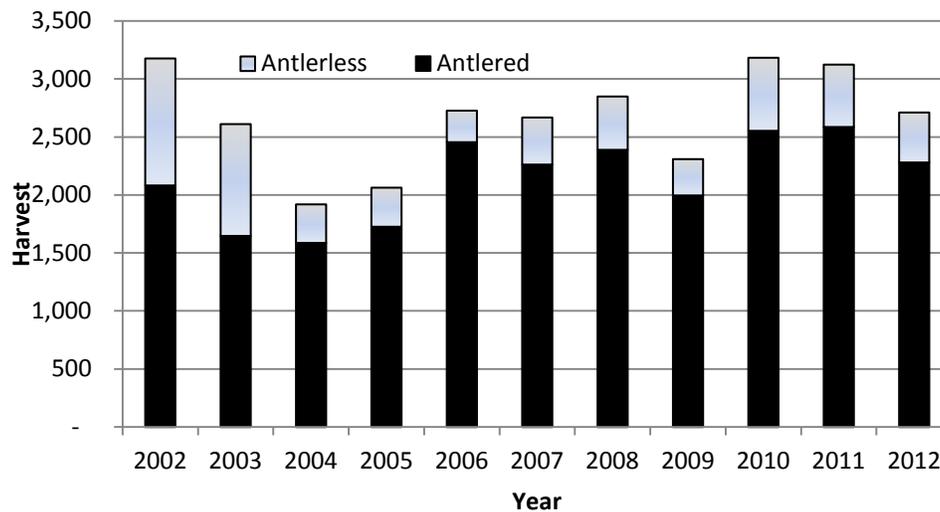
Mule deer comprise a small portion of the deer population in Kansas; however, they receive enthusiastic support from deer hunters. Limited survey efforts are currently used to monitor mule deer populations. We do not have estimates of survival rates. Distance sample surveys in 2011 estimated the density to be 1.8 mule deer/mile² (95% CI: 1.2 - 2.7) in the western portion of the range and approximately 0.2/mile² in the eastern portion of their distribution. Estimates from spotlight surveys indicate a pre-firearm season population of approximately 35,000 animals. No discernible trends have been seen in the herd composition with 6 year average ratios of 42.5 bucks:100 does and 76.5 fawns:100 does. Field biologists indicate a declining population of mule deer, especially in the eastern part of their range; however, daily diaries from bowhunters suggest an increasing trend in mule deer observations.

Figure 4. Trends in mule deer observations from Kansas bowhunter diaries, 1998 to 2012.



Our hunting regulations have been liberal for white-tailed deer while being restrictive for mule deer. In recent years mule deer could be taken on about 10% of the deer permits issued in Kansas and more than half of those have been issued to landowners. Each permit allows only one deer to be taken and all permits that allow 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 2,669 mule deer/year during the last 11 years.

Figure 5. Trends in the number of mule deer harvested in Kansas, 2002 to 2012.



-Lloyd Fox, Kansas Department of Wildlife and Parks

Montana

FWP does not collect data to estimate mule deer abundance in Montana. Population growth is indexed with data from trend areas that represent populations in the state. Management is guided by a population model with harvest, population trend, recruitment, and buck abundance as inputs. Recent trend estimates have been as much as 30% below long term average.

Mule deer over much of Montana experienced significant declines in recruitment and observed numbers of mule deer during 2007 to 2011. Surveys during 2012 to 2013 revealed improved recruitment and stable numbers in central and eastern Montana. Mule deer populations in western Montana continue to perform poorly. Recent, significant declines of mule deer populations in eastern Montana were associated with inclement winter/spring weather and drought. Harvest management responses have included conservative adjustments to general license harvest opportunity and dramatic reductions in antlerless licenses. Harvest of antlerless mule deer declined from 20,000 to 24,000 annually in 2007 to 2009, to 6,832 in 2012.

-George Pauley, Montana Fish, Wildlife and Parks Department

Nebraska

Harvest of mule deer bucks was 7,325 in 2012, down 3% since 2011 and down 20% from the record high of 9,115 in 2008. Mortality from a combination of factors that included meningeal worm, CWD, and interspecific competition with whitetail were the suspected causes. Antlerless harvest of mule deer in 2012 was 1,940, the lowest in 31 years.

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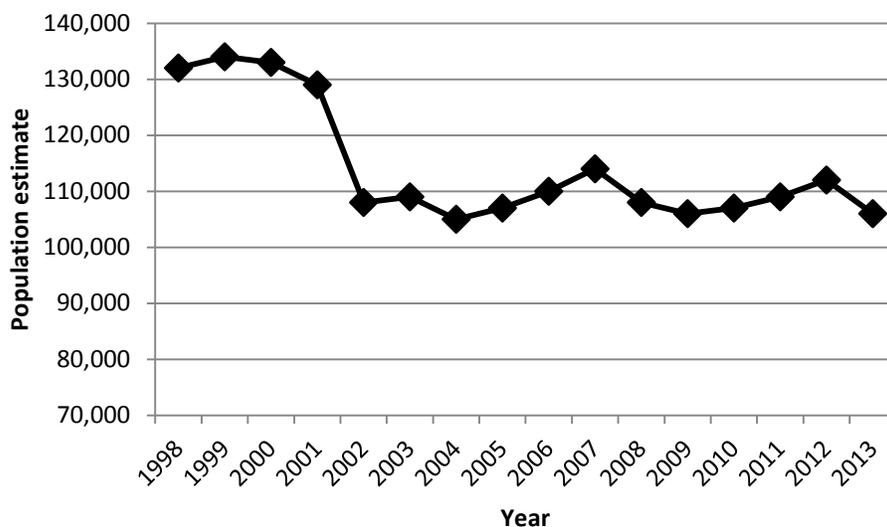
Harvest of does and fawns was restricted to allow for population recovery. We hope that the record-breaking drought and epizootic hemorrhagic disease EHD event of 2012 which killed about 30% of our whitetail herd may ease suspected competition and allow mule deer to recover.

-Kit Hams, Nebraska Game and Parks Department

Nevada

Population estimates for mule deer in Nevada based on computer modeling suggested a decline of approximately 18% from just over 130,000 deer between 1998 and 2001, to a more recent estimated population level closer to 110,000 deer. A major decline (about 20,000) was reported in 2002 and since then, estimates have remained relatively stable, between 106,000 and 112,000 deer. The 2013 estimate decreased to 106,000 deer from 112,000 in 2012. Deer tags were increased nearly 50% for the 2012 season and statewide hunter success for all hunters was 42%, up from 39% for the previous two years. Percent bucks with 4-point antlers or better in the harvest has averaged 40% over the past 10 years and even with the substantial increase in tags was 37% in 2012. With 34,000 mule deer classified during post-hunt helicopter surveys in Nevada, the statewide post-hunt buck:doe ratio remained the same as that observed the previous year (a record 32:100). The fawn:adult ratio of that sample was only 41:100. Spring surveys classified over 33,000 mule deer and a statewide spring recruitment rate of only 31 fawns:100 adults was measured. Drought conditions will likely continue to negatively affect mule deer again this year.

Figure 6. Nevada mule deer population estimate trends 1998 to 2013.



-Larry Gilbertson, Nevada Department of Wildlife

New Mexico

The latest drought hitting New Mexico that began in the winter of 2010-2011 has continued throughout the state. Mule deer populations have declined statewide because of low recruitment. Some moisture occurred statewide during the monsoon season followed by the 2011-2012 winter with more precipitation than in 2010-2011. 2012-2013 has been one of the driest periods in recorded history. Overall, fawn ratios were too low to maintain or increase population levels. Most of New Mexico's wildlife populations are stressed from this sustained drought and mule deer will continue poor production under these conditions. In response to the drought conditions and low recruitment rates, license numbers for mule deer in some GMUs have been reduced for the 2013-2014 hunting season.

On a positive note, during the past two years, wildfires in New Mexico have burned several hundred thousand acres. Specifically in the Gila National Forest, three fires have burned close to 500,000 acres. The Silver Fire in the southeastern portion of the Gila National Forest approached 100,000 acres. This will translate into better habitat conditions for mule deer in those areas. Beginning in 2014, the New Mexico Department of Game and Fish (NMGF) will initiate a process to evaluate, make recommendations, and implement changes to the deer rule for the four year cycle. These changes will be implemented in 2015.

New Mexico has begun a trap and translocation project for mule deer in the southern part of the state. Approximately 170 mule deer have been trapped and moved to three different locations. The deer are being monitored to determine movement patterns, survival rates, and specific cause mortality. These projects will continue in the future.

Habitat work is continuing; funded both through our Habitat Stamp Program that funds improvements on BLM and USFS property, as well as funds originating from our Enhancement Tags (statewide licenses). These monies are used in selected priority areas. We have identified three focus areas for this work: GMU 2C in northwest New Mexico, GMU 18 in central New Mexico, and GMU 16 in west-central New Mexico. Other areas are also being considered. Prescriptions include thinning and burning as well as planting and seeding with native browse. The Mule Deer Working Group (MDWG) Habitat Guidelines (Heffelfinger et al. 2006, Watkins et al. 2007, Fox et al. 2009) are used as a reference in implementing these prescriptions.

Our Private Land Deer Conservation Incentive Program has expanded over the past 7 years to include >50 ranches. This program is being reviewed to determine changes that need to be made and implemented with landowners. Approximately 40% of New Mexico is private land, therefore it is critical to work with landowners to improve conditions for mule deer. This program works with private landowners to improve the habitat on their property. Again, we try to use the MDWG Habitat Guidelines (Heffelfinger et al. 2006, Watkins et al. 2007, Fox et al. 2009) in cooperating with the landowners. In return for their work, participating landowners are issued specific sport hunting incentives which they can market with the goal of using generated funds to further pay for their habitat work. Additional funds are sought through Federal Farm Bill Programs. Consultation among agency staff, landowners, Natural Resources

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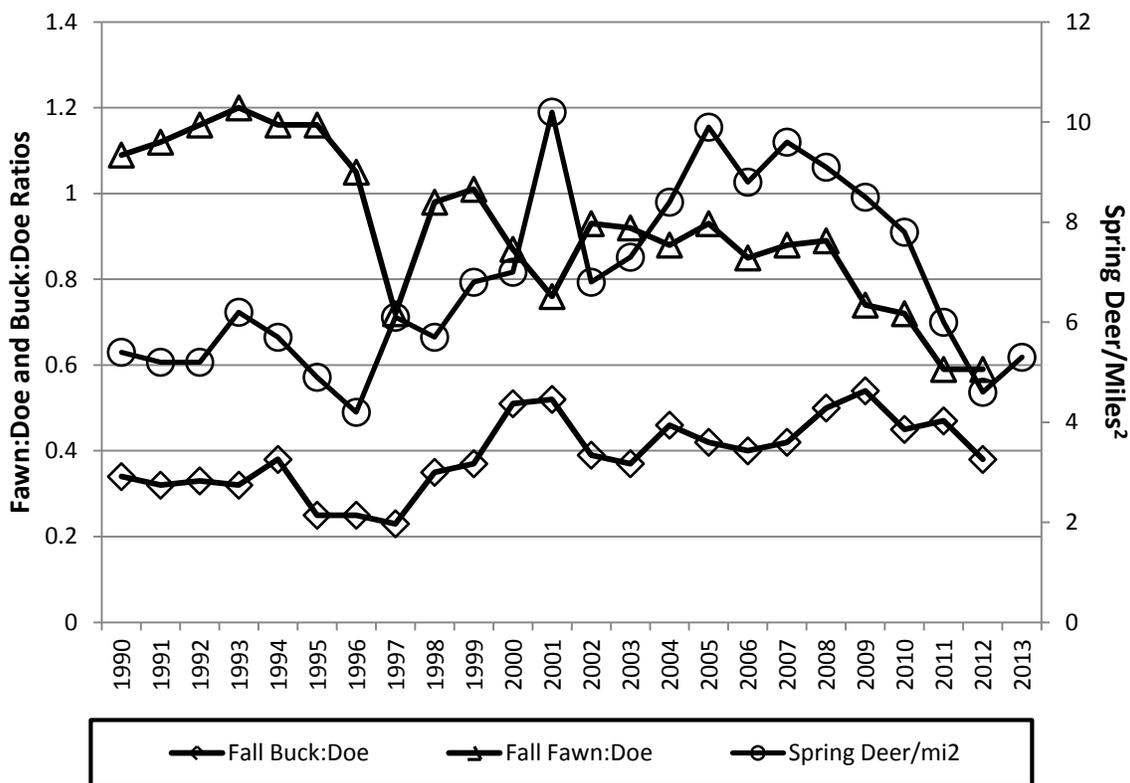
Conservation Service, etc., has resulted in an expansion of the acreage in the program as well as increased variety of prescriptions employed.

-Kevin Rodden, New Mexico Department of Game and Fish

North Dakota

The badlands mule deer population estimate increased from 1998 to 2007 because of a decade of very mild winters and a conservative harvest strategy. Since 2008, numbers of mule deer have declined due to 3 consecutive severe winters (2008 to 2010). Fawn production following the winters of 2008 to 2010 resulted in the 4 lowest fawn:doe ratios since the late 1950s. In response to the declining trend in numbers of mule deer, no antlerless licenses were issued for the badlands deer units in 2012. The combination of no antlerless harvest and a relatively mild winter in 2012/2013 over much of the badlands led to a small increase in numbers of mule deer. The 2013 spring index was 15% higher than in 2012, but 22% lower than the long-term average.

Figure 7. 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. The result is that very little opportunity exists to hunt mule deer in Oklahoma and those opportunities are mostly on private land. Hunters take an average of 200 mule deer/year in Oklahoma. In 2012, 147 mule deer were harvested. Oklahoma does not have a separate mule deer license, they are part of the general hunting license for deer. However, we do provide some protection for mule deer by not allowing does to be harvested during any firearms season and as a result, have a very low doe harvest rate.

-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. 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. Further, quadrat surveys have been flown in 13 eastern Oregon mule deer management units.

Oregon's Mule Deer Initiative and Black-tailed Deer Management Plan implementation process continues to move forward as well. Over 405,000 hectares of habitat have been treated, primarily juniper (*Juniperus spp.*) control, specifically to improve mule deer habitats. A strategy to more aggressively improve black-tailed deer populations and habitats has been developed by local public working groups and is now in final review by Wildlife Division.

-Don Whittaker, Oregon Department of Fish and Wildlife

Saskatchewan

Mule deer populations continue to fall below long term averages in several core areas across Saskatchewan. The winter of 2012-13 has been difficult for deer populations due to extended periods of above-average snowfall. License availability will remain similar to the previous years for both antlerless and either-sex components of the population. Surveys completed this fall will be used to further assess the population status.

- Travis Williams, Saskatchewan Department of Environmental and Resource Management

South Dakota

Mule deer populations in South Dakota have decreased in recent years following multiple years of high harvest rates and severe winters. Pre-season recruitment estimates have shown declining trends over the past 4 years, but the estimate of 65 fawns:100 does in 2012 was not substantially different from the previous year. Eighty percent of deer management units on the prairie are currently below population objective, and license quotas have been reduced. Mule deer populations in the Black Hills region are below objective but remain stable despite restricted harvest regulations promulgated several years ago. Record drought conditions experienced in 2012 could affect some herds, but the winter of 2012/13 was mild to normal in the mule deer range of the state; recent precipitation has removed most areas out of the severe drought status thus far in 2013. Loss of land enrolled in the Conservation Range Program, native grassland, pasture, and rangeland-to-agriculture conversion continues to be a concern for mule deer management.

-Andy Lindbloom, South Dakota Department Game and Fish

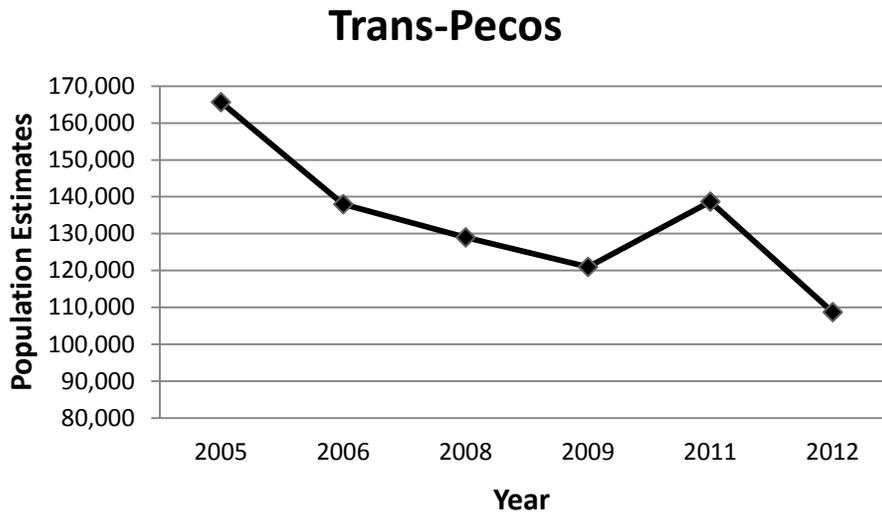
Texas

Trans-Pecos

In general, the Trans-Pecos population is trending downward primarily from extended and expansive drought conditions during most survey years after 2005. Estimates from a sightability model show an approximately 20% decline from 2011 (138,703) to 2012 (108,739). Raw, uncorrected survey data indicate a decline of about 40% in mule deer numbers from 2009 to 2012. We did not survey in 2007 and 2010. The estimated 2012 fawn crop of 32 fawns:100 does was better than the 2011 estimate of 13, but slightly below the long-term average (40 to 45). Improved range conditions in parts of the region helped increase fawn production in 2012. The sex ratio was similar for both 2011 and 2012, and has been fairly stable since post-season surveys began in 2005, although the buck:doe ratio has slightly decreased since 2009. This could be because extended drought conditions increased post-rut mortality among bucks.

Mule Deer Working Group. 2013. Range-wide Status of Mule Deer and Black-tailed Deer - 2013.

Figure 8. Trends in mule deer population estimates in the Texas Trans-Pecos, 2005 to 2012.



Panhandle

Similar to the Trans-Pecos, the Panhandle population decreased from 2011 (81,705) to 2012 (70,544). Raw count data suggest the Panhandle population has declined approximately 50% since 2010. However, Sighting model 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 affected by poor range conditions over the last 2.5 years, with fawn crop estimates of only 6 fawns:100 does in 2011 and 16 fawns:100 does in 2012. This is much lower than 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 3 years it has experienced extreme fluctuations. The sex ratio for 2012 was 33 buck:100 does, like 2008 and 2009. 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 and in most years the post-season sex ratio has been below 25 buck:100 does.

Figure 9. Trends in mule deer population estimates in the Texas Panhandle, 2005 to 2012.

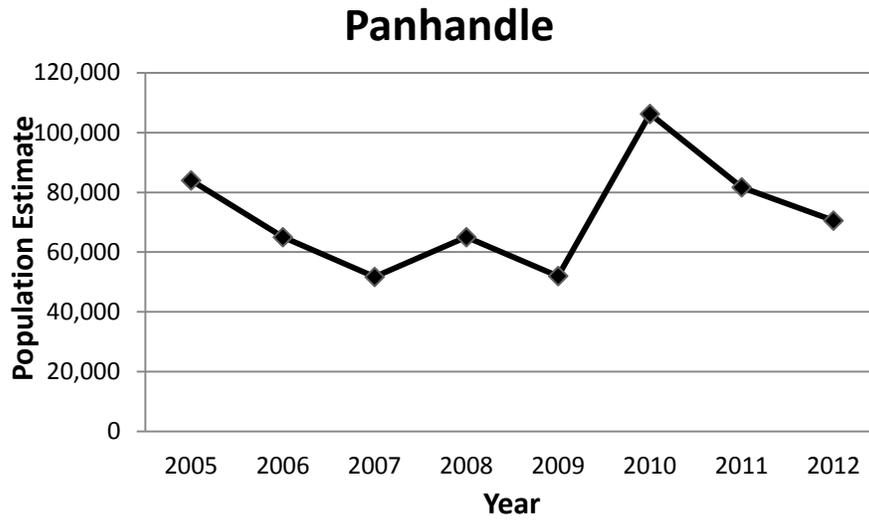
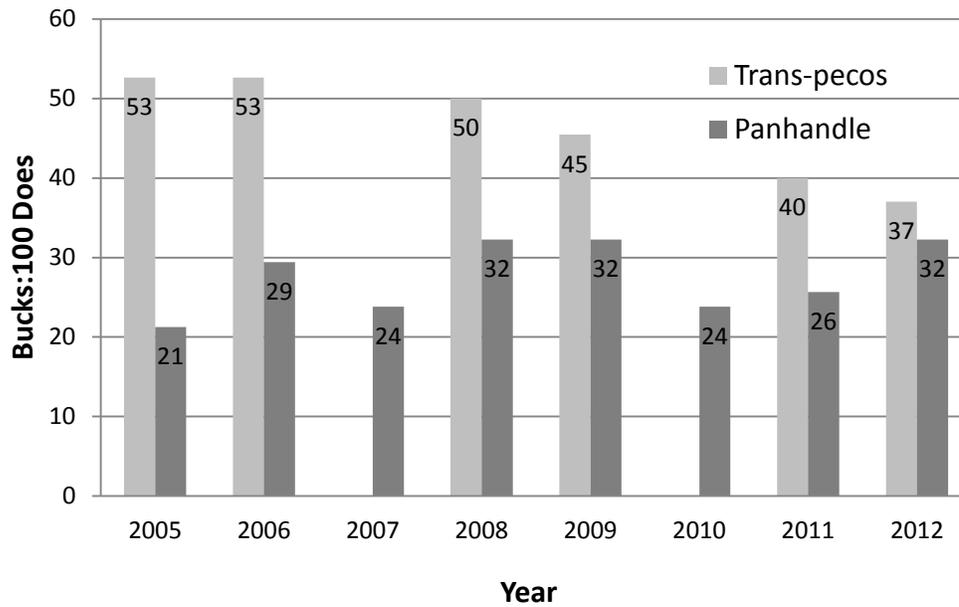
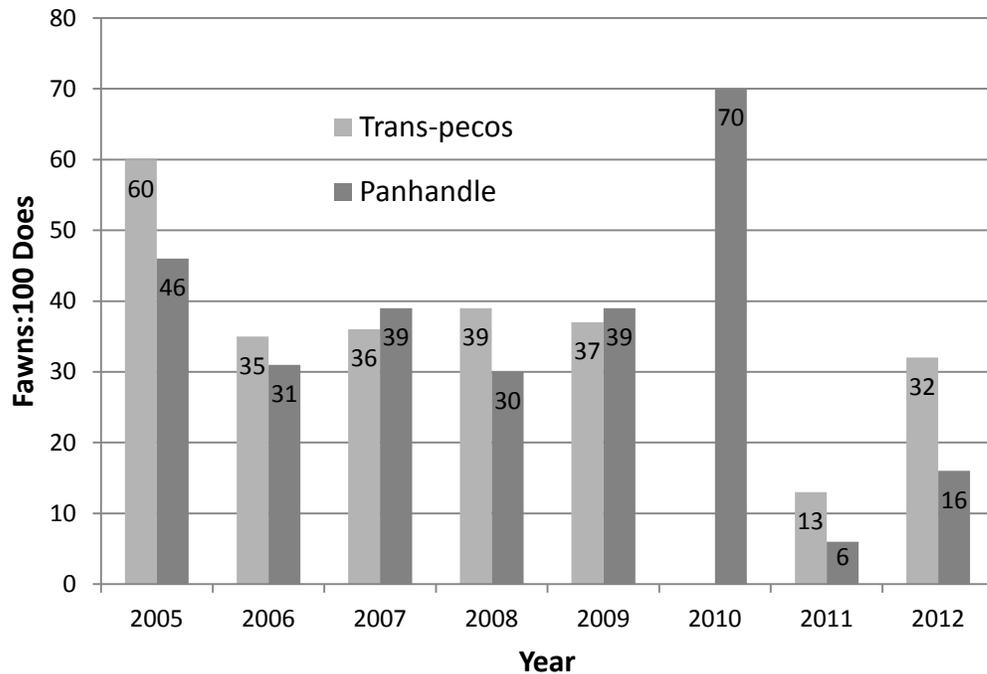


Figure 10. Trends in the number of mule deer bucks per 100 does in the Texas Panhandle and Trans-Pecos area, 2005 to 2012.



Mule Deer Working Group. 2013. Range-wide Status of Mule Deer and Black-tailed Deer - 2013.

Figure 11. Trends in the number of mule deer fawns per doe in the Texas Panhandle and Trans-Pecos area, 2005 to 2012.

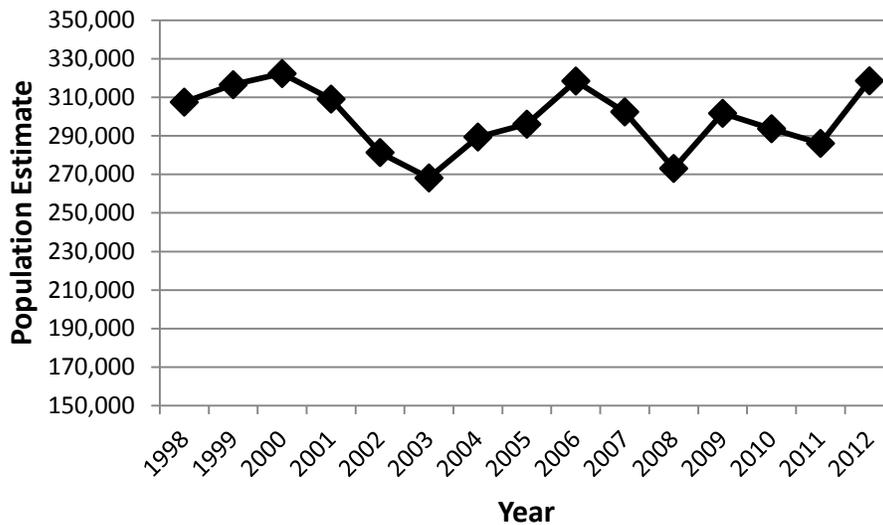


-Shawn Gray, Texas Parks and Wildlife Department

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. Populations fell to about 250,000. Since that time they 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 2013 objective of 350,000 deer and a long term objective of 423,000 deer.

Figure 12. Utah mule deer population estimates 1998 to 2012



-Anis Aoude, 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 when they occur. Mild to average winters the last 3 years allowed for better over-winter survival and strong young of the year 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, southeastern Blue Mountains, and the Columbia Basin mule deer populations were all stable. Summers are a critical time of year for deer in these portions of the state. The last summer in these 3 areas have been dry and hot. 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) experienced a slight 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 still struggle with hair loss as well as less than ideal habitat conditions. There is still potential to improve black-tailed deer

Mule Deer Working Group. 2013. Range-wide Status of Mule Deer and Black-tailed Deer - 2013.

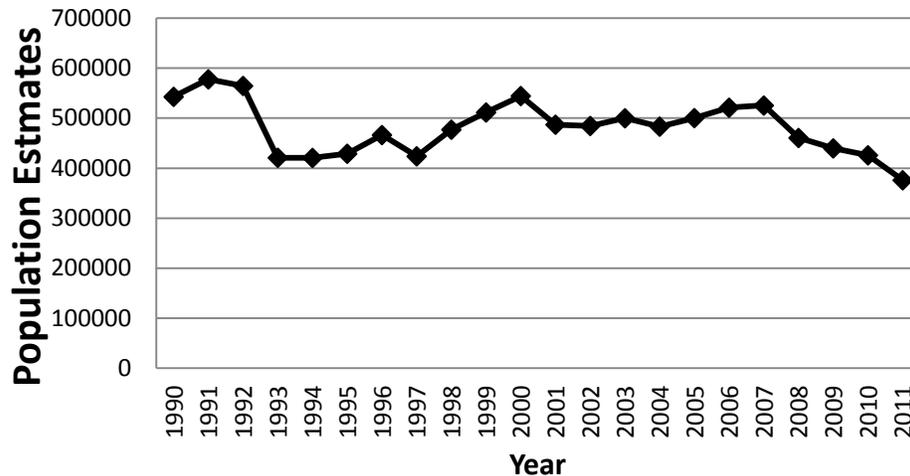
numbers if private and public forests were managed for an increase in early successional habitat.

-Jerry Nelson, Washington Department of Fish and Wildlife

Wyoming

Mule deer populations throughout Wyoming have generally declined since the early 1990s. It was apparent, given declining production of mule deer fawns starting in the late 1980s, that some 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 65 fawns:100 does 12 times. Throughout Wyoming, mule deer populations have declined by an estimated 168,000 (31%) mule deer since 2000. After the 2011 hunting seasons, it was estimated there were 376,000 mule deer in the state. This is 24% below the statewide objective of 564,650 mule deer.

Figure 13. 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. 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.

Mule Deer Working Group. 2013. Range-wide Status of Mule Deer and Black-tailed Deer - 2013.

Following a recent decline in 2008/09, believed to be the result of harsh winter conditions, numbers have been rebounding and deer are more commonly observed in the northern part of their distribution.

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 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.

-Rob Florkiewicz, Yukon Department of Environment

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