NEVADA DEPARTMENT OF WILDLIFE

2007-2008 BIG GAME STATUS

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Cover Photos by Jim Nelson and Mike Cox of Nevada mule deer and Nevada landscapes.

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This Program Receives Federal Aid in Wildlife Restoration
Grant W-48-R-39; Sub-Grant II, Big Game Management

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TABLE OF CONTENTS

BIG GAME STATUS

STATEWIDE SUMMARY

MULE DEER

In the short-term, since 2003, deer hunters and deer harvest have increased every year. The 2007 deer season resulted in 8,743 deer harvested, up approximately 400 deer from 2006 and a substantial increase from just under 6,000 in 2003. Over this same 5-year period, 2003 – 2007, deer tag holders increased from almost 15,000 to about 18,600. Hunter success rates continued to be strong with resident rifle hunters experiencing 47% success and nonresident rifle hunters even higher at 55%. In addition, the percent of 4-point or better bucks of the total buck harvest continued to be 40% for the third straight year; a statewide value that few if any western states can equal. The 2007 deer season implemented a large number of split rifle seasons throughout the state with 19 of the 41 unit groups having a 16-day early and late season. As expected, the draw odds for the early seasons were typically from 2:1 to about 4:1, providing better chances for those who simply want to hunt. The late season odds were typically 2 to 10 times greater depending on the percent split of tags to the late season. Most unit groups did showed a 10 – 15% differential in success rates between early and late. But only about 60% of the new split seasons had a substantially lower success rate in the 2007 early season compared to its single long season in 2006. This indicates that to fully appreciate the opportunity to accommodate more hunters in the early season, the season length would likely need to be reduced to a 9- or 12-day season. As expected, the point class of the bucks taken in the early season was much lower than that of the late season, further supporting the management goal of increasing hunter opportunity but at the same time having protection of the mature buck segment with limited harvest of mature bucks in the early season.

With a limited post-season aerial survey statewide, 19,000 deer were classified. The data resulted in one of the lowest fawn production values ever in the history of aerial surveys at 33 fawns/100 adults. It was even lower than the 1993 fawn ratio which is known as one of the most difficult summers for mule deer on record. The snow water equivalent or snowpack values in late April 2007 for almost every major water basin that have SNOTEL stations that influence Nevada deer herds, were near or below 50% of the long-term average. The 2007 summer was equally brutal on fawns. A single field experience can illustrate what may have contributed to their high mortality. Walking up a normally productive drainage in some of the best mule deer habitat in Nevada in August 2007, presented several fawn carcasses from the current year. Water flow was drastically reduced to intermittent seeps in a normally flowing stream, almost no green foliage, and almost no leader growth on crucial browse species. One could read the signs and conclude that does likely increased their distance travelled and the number of movements per week to forage and water, exposing her already malnourished fawn to coyote and even mountain lion predation. But even if predator control was conducted in a year like 2007, fawns would have still died by the hundreds before winter was over. The more appropriate timing for effective predator control on a herd by herd basis is when you start with does in good condition and you have habitat resources to keep their fawns alive until the following spring. For many of our central Nevada herds the summer alone did the fawns even before the winter hit. For those herds that fared better through the summer, many were faced with difficult winter conditions that took its toll on fawns in January and February, evidenced by the third lowest spring fawn ratio on record, 26 fawns/100 adults, from a sample of 26,000 deer in March and April 2008. Driven by the very poor fawn recruitment, the 2008 statewide population estimate is 108,000, a decline of 5% from 2007. A positive note is that the post-season buck ratio was 31 bucks/100 does, the second highest on record (last year's was the highest at 32 bucks/100 does) since the 1960's. Another glimmer of hope is that as of 20 April 2008, most of Nevada water basins that were near or below 50% snowpack at the same time last year, are between 80% and 120% of the long-term average snow-water equivalent and total water-year precipitation values.

PRONGHORN ANTELOPE

Pronghorn composition surveys conducted during the fall and winter of 2007 resulted in the classification of 10,386 pronghorn yielding a ratio of 38 bucks/100 does/30 fawns. In comparison, 2006 composition surveys resulted in the classification of 7,427 pronghorn with a ratio of 42 bucks/100 does/44 fawns. Both buck and fawn ratios dropped from highs experienced during the past several years. Fawn production and recruitment rates were particularly low in the eastern and central portion of the state where surveys noted fawn ratios ranging from a low of 9 fawns/100 does to a high of 35 fawns/100 does. However, survey totals continue to indicate record high population levels. The 2008 statewide adult population is estimated at 24,000 pronghorn and is similar to the 2007 estimate.

The Department continues to work with land management agencies to secure sites to establish or augment pronghorn herds in Nevada. During the winter of 2007-08 Department biologists handled over 200 animals on winter ranges in Management Area 6 and relocated 187 of these animals to suitable sites in Management Area 13 in Nye County. The Department continues to be active in securing and developing water sources for use by pronghorn and other wildlife species.

ROCKY MOUNTAIN ELK

The record sale of 3,080 elk tags in 2007 resulted in the harvest of 1,396 elk compared to 2,350 tags sold last year with a harvest of 1,161 elk. The 2007 elk harvest consisted of 630 bulls and 766 antlerless elk. The quality of bulls in the harvest remains high with 66% of bulls reported as being 6-points-or-better. The average age of harvested bull elk was 5.7 indicating all age classes were well represented in Nevada's elk populations in 2007. Harvest strategies are designed to maintain population objectives with a combination of bull harvest and intensive cow harvest directed towards individual unit population objectives. In units where elk populations are below objectives, elk harvest management is designed to allow those populations to increase. In the elk planning arena, the White Pine County Elk Sub-Plan was submitted to the Nevada State Board of Wildlife Commissioners for adoption following 4 years of preparation. The Department's Elk Management on Private Lands Program continued to be a great success and benefit to landowners with 66 elk-incentive tags sold for an estimated revenue generation of more than $650,000 for private landowners this year.

A total of 5,447 elk was classified during aerial winter composition surveys; yielding statewide ratios of 33 bulls/100 cows/34 calves compared to the previous year when 6,053 animals were classified, yielding ratios of 33/100/47. Calf recruitment was poor in 2007 and was one of the lowest statewide recruitment figures ever documented in Nevada. The 2007 statewide spring adult elk population estimate is only 1% higher than last year with 9,500 elk estimated compared to 9,400 last year. Nevada's elk harvest management continues to be based on meeting population objectives within the guidelines of the state's Elk Species Management Plan. Precipitation totals for the current water year are only average and range conditions will depend more on summer moisture this year. This in turn will dictate whether antler growth and better calf production are realized. Hunters lucky enough to receive an elk tag for 2007 should enjoy good hunting conditions with overall healthy elk populations and good availability of mature bulls for harvest.

DESERT BIGHORN SHEEP

Nevada is a leader in providing quality desert bighorn hunting opportunities. A record number of 172 tags was issued in the 2007 Nevada desert bighorn hunt. Hunter success continues to be high at 87%. Hunters averaged 5.6 days hunting in the field. The statewide average age of harvested rams was 6.4 years with an average B&C score of over 149 points.

The statewide desert bighorn survey in 2007 classified 3,061 animals. The calculated lamb ratio of 44 lambs/100 ewes indicates that recruitment was good enough for continued statewide population growth. Although population estimates by hunt vary with increases and decreases, the 2008 statewide desert bighorn population estimate is the highest ever recorded at 6,600 animals. A large amount of credit for this achievement lies within past and present NDOW biologists working along with dedicated, passionate, and active sportsman's conservation organizations.

Restoration efforts of bighorn sheep populations into historic Nevada ranges continued this past year with desert bighorns being released in the Delamar Mountains of Lincoln County, White Pine Range, Nye County, and the Wassuk Range, Mineral County.

CALIFORNIA BIGHORN SHEEP

Aerial surveys were conducted for California bighorn in approximately half of the occupied ranges during 2007. A total of 792 sheep were classified as 226 rams, 392 ewes and 174 lambs for a ratio of 58 rams/100 ewes/44 lambs. Lamb ratios declined in a number of the large bighorn herds in Washoe and Humboldt

Counties from what was observed in 2006. Production and recruitment rates were down for other big game species in these areas as well. A lack of precipitation received during the winter of 2006-07 followed by a record breaking dry summer may have contributed to these lower recruitment rates.

A major disease event occurred this past year in the Hays Canyon Range in Hunt Unit 013. Based upon information collected from a number of animals, sheep in this area were succumbing to pneumonia caused by Pasteurella spp. Some of the bacteria biotypes have been linked to other die-offs of bighorn including the Hells Canyon die-off which occurred over a large geographic area in Idaho, Washington, and Oregon. Surveys conducted during the Fall 2007 were unable to locate any live bighorn however, the magnitude of this die-off may not be known for several years. This hunt area will be closed during 2008 and will remain so for the foreseeable future.

Harvest information indicates that California bighorn hunters continued to have hunts of a lifetime with 100% success during this past year harvesting 43 rams with an average age of 6.8 years and an average Boone and Crockett score of 147 4/8 inches.

ROCKY MOUNTAIN BIGHORN SHEEP

Rocky Mountain bighorn sheep populations increased 6% overall from 2007 to 2008. Statewide, survey sample size remained above 300 bighorn observed. The statewide ram ratio remained in the 60's and the lamb ratio remained in the high 40's allowing for the population increase. Nine tags were available for 2007 and all of the hunters were successful. The average age of rams harvested was 6.1 and the average B&C green-score was 172. The largest ram (6 years-old) was harvested in Unit 101 and was measured at 190 & 5/8! The first bighorn tag since 1991 was offered for Unit 114 and a 7 year-old ram was harvested. Rocky Mountain bighorn populations continue to exhibit positive population trends. However, recent interest in the use of domestic goats for meat production and weed control and domestic sheep in Unit 101 presumably for fire prevention, threatens the future of Rocky Mountain bighorn in both Units 101 and 102 due to disease risk. Hunters who encounter estray goats or domestic sheep or observe any wild sheep exhibiting abnormal behavior are encouraged to notify the Department of Wildlife and the Department of Agriculture.

Due to strong ram ratios observed statewide, hunting opportunity for Rockies is expected to be slightly increased for 2008. Last year's odds of drawing a resident Rocky tag were 565:1, ranging from 387:1 in Unit 102 to 746:1 in Unit 074 and making this tag the most sought after big game tag in Nevada. Successful tag applicants lucky enough to draw one of these tags should experience the hunt of a lifetime barring any disease outbreaks!

MOUNTAIN GOAT

There were 29 mountain goat tags in 2007 including one PIW tag, 25 resident tags and 3 nonresident tags. Goat tags have increased from 11 in 1999 to 29 in 2007. There was 100% success in 2007 compared to 90% in 2006. Hunters checked in 23 billies and 6 nannies in 2007 compared to 23 billies and 3 nannies in 2006. Average age was 5 or above in all three units and horn length was above average in all three units indicating all age classes were well represented in the 2007 population. Surveys were not conducted in 2007-08 and only a limited sample of 32 goats were observed in conjunction with spring deer surveys; yielding a ratio of 28 kids/100 adults. This suggests kid production was similar to last year and goat populations remain stable. The same threat of possible disease transmission from domestic goats and sheep exists with mountain goats as described above for Rocky Mountain bighorn sheep. Hunters are asked to report estray goats or domestic sheep or observations of wild sheep exhibiting abnormal behavior to the Department of Wildlife and the Department of Agriculture. The odds of drawing a resident goat tag were 164:1 in 2007. The number of goat tags in 2008 should be similar to last year. Applicants lucky enough to draw one of these tags should experience the hunt of a lifetime in the remote, but beautiful, high elevation terrain inhabited by mountain goats in the Ruby Mountains and East Humboldt Range.

MOUNTAIN LION

The 2007-08 (07) mountain lion season resulted in an overall lion mortality of 189 lions. Sport hunter harvest accounted for 145 lions or 77% of the total lions killed. Average sport lion harvest statewide since 2000 is 148 lions, with 07 showing a decrease of 2%. In 2006-07 sport harvest was 134, an increase of 8% in 07. This fluctuation in harvest falls well within normal ranges and is closely associated with hunting conditions during the winter months. The average lion take since 1973 is 139 lions, which is a somewhat misleading average since only once between 1973 and 1987 did harvest surpass 100 lions.

Lions killed for the protection of livestock, safety or natural resources such as deer and bighorn sheep increased dramatically in 07. Thirty seven lions were taken by the USAD/APHIS/Wildlife Services (WS) representing 20% of the total lions killed. This is an increase of 46% over last year and a 25% increase over the long term average. This is mainly due to several Predation Management Projects implemented by sportsmen's dollars to reduce the impact of predation on struggling ungulate populations, mainly deer. Twelve of those lions were taken from Predation Management Project 18 in Hunt Unit 014, the Granite Range for the protection of struggling mule deer herds. Three other lions were taken from Project 17, the Elko County Deer and Elk Enhancement Project in Hunt Units 101, 105 and 107 for the protection of deer and elk. Seven additional lions were taken to protect bighorn sheep in two locations, the Virginia and the Delamar Mountains. The rest of the WS lions (15) were removed for the protection of livestock or human safety. The remaining seven lions (4%) were killed either in traps or hit by vehicles.

Sport harvest was 58% of the statewide harvest objective of 349 mountain lions, and estimated to be about 6% of the statewide population. Males constituted 59% of the total 07 sport harvest compared to the 20-year average of 58%. The average age of sport harvested mountain lions for the 07 season was 3.6 years of age compared to the 20 year average of 4.6 years and last year's average of 3.8.

Breaking down the 189 mountain lions removed by body condition revealed that 40% of the lions were found to be in Excellent shape, 37% in Very Good condition, 16% in Good condition and 5% and 2% were in Fair and Poor condition respectfully. Ninety three percent were rated in Good condition or better.

WEATHER AND CLIMATE EFFECTS

Below are summaries for each part of the state describing how moisture, snow, and temperature effects both vegetation and big game herds along with Table 1 that summarizes snow pack and water-year precipitation from SNOTEL sites throughout Nevada and the surrounding water basins.

Central Nevada

According to data published by the Western Regional Climate Center (WRCC), central Nevada suffered below average precipitation receipts from October 2006 through November 2007. Precipitation receipts totaled only 70% of normal for the October through December 2006 period of the 2007 water-year. Conditions did not improve much during early 2007 with the months of January through March remaining very dry. By the end of March 2007, the precipitation total for central Nevada stood at a mere 71% of average for the water year. Although the dry, mild winter allowed for good carryover of adult animals, impacts to habitat conditions may be long lasting. The spring of 2007 saw little relief and June ended with the water-year precipitation total at 73% of normal. Impacts to the quality and quantity of key forage species during the winter and spring periods, caused by ongoing drought conditions, resulted in poor production for many species of big game in central Nevada in 2007. Conditions remained dry throughout the summer of 2007, which continued to impact already stressed vegetation and wildlife species throughout central Nevada as well as reducing water availability in the more arid areas of the region. Due to a surprisingly wet September, the 2007 water-year ended at 81% of normal. Unfortunately, the remainder of the fall of 2007 saw a return to very dry conditions and animals entered the 2007/2008-winter period in comparatively poor body condition. December 2007 was the first month in over a year that precipitation reached average levels and fortunately, conditions have remained favorable through March of this year.

The cumulative impacts of over a year of drought conditions have negatively affected many big game species in central Nevada over the past year. Although the late winter and early spring of 2008 has seen a return to more favorable conditions, lingering effects of the past year will likely continue to impact big game populations and their habitats for some time. Conditions will need to remain favorable through the late summer period, at the very least, in order for noticeable improvements in animal health and habitat conditions to take place. The failure of Federal Land Management agencies to institute drought closures or reductions in livestock stocking rates in many central Nevada allotments during this latest drought period has only compounded recent impacts to wildlife and their habitats.

Southeastern Nevada

According to BLM precipitation data, 26 areas throughout Lincoln County received an average of 56% of the previous 10-year average of precipitation between January and December 2007. According to WRCC/DRI, during 2007 Pioche and Alamo received 60% of average precipitation since 2000, while Caliente received 44% of average precipitation since 2000. Since January 2008, approximately 119% of average precipitation has fallen in Pioche, while Caliente is 86% of normal, and Alamo is 78% of average. Lincoln County was mostly dry and warm during the fall of 2007. Winter precipitation was slightly higher than average throughout Lincoln County. Since that time, little precipitation has been received throughout the area. Timing of precipitation is very important. Southeastern Nevada can receive high amounts of precipitation over short time frames, then be very dry for months at a time. Under these conditions, wildlife water sources don't get recharged, and forage is in short supply as well as poor conditions. Heavy snowfall totals in February will result in good spring forage growth, but also likely took a toll on wildlife populations.

Range conditions are poor across much of Lincoln County at this time. Heavy snows and cold temperatures have delayed spring green-up across the northern portion of the county, including the Wilson Creek, Egan, and Schell Creek ranges. Warmer temperatures combined with little moisture in the southern portion of the county have resulted in poor range conditions through the Clover, Delamar, Meadow Valley, and Mormon Mountain ranges. While these conditions may not be beneficial to big game populations, it may also reduce the potential for large scale wildfires by reducing the germination and growth of exotic annual grasses in these areas. Unfortunately this seems to be the trade-off at this point in time; higher winter and spring precipitation may result in better recruitment of young into wildlife populations and also result in increased fuel loads which can result in increased size and intensity of wildfires.

Overall, weather conditions in southeastern Nevada have probably resulted in lower numbers of young recruited into big game populations. Lower precipitation totals throughout the year combined with deep, crusty snow are not conducive to survival of deer and antelope fawns. Low precipitation in the Mojave Desert portion of Lincoln County generally results in lower numbers of lambs observed on bighorn surveys, as well as lower numbers of upland game animals.

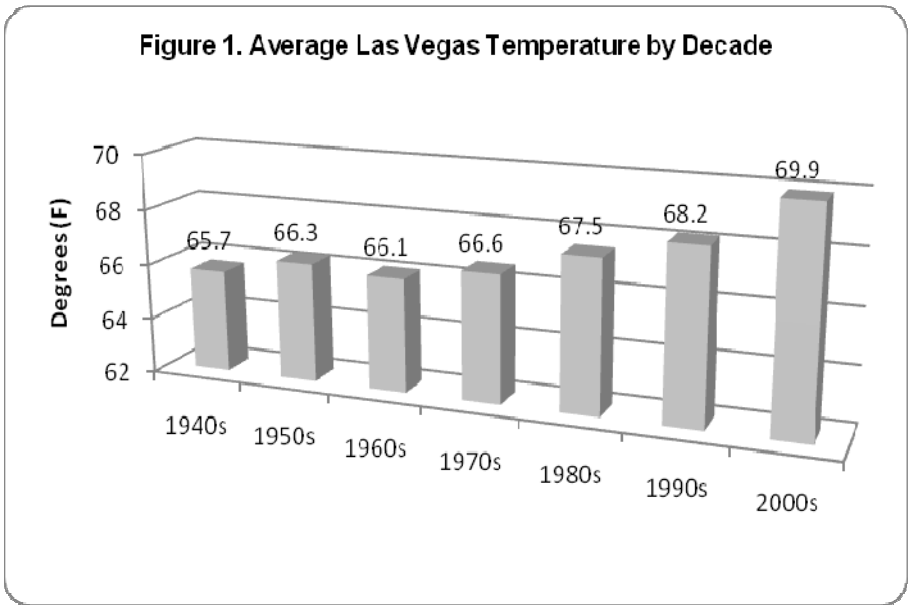
Southern Nevada (Mojave Desert)

The Mojave Desert region in southern Nevada remains in a drought. Based on rain gauge data collected by Clark County Regional Flood Control District in cooperation with United States Geologic Survey and National Weather Service (NWS), Las Vegas and outlying areas in Clark County experienced drier conditions from November 2005 through October 2007.

The recent winter of 2007-08 was wetter than the two preceding winters. Beginning in November 2007 and extending into January 2008, storms produced precipitation generally in brief and localized events. In the short term, vegetative conditions in early 2008 are improved relative to 2006 and 2007. More recently however, the brief period of normal precipitation has been eclipsed by return to drought conditions in February and March 2008. In its seasonal outlook, the NWS forecasts drought conditions to persist or intensify through June 2008.

In Las Vegas, temperature data collected since 1937 by NWS indicate 2007 was the hottest year on record. The seven hottest years on record have occurred within the present decade (Figure 1).

Overall, big game populations have endured protracted drought conditions. Reduced precipitation coupled with increased temperatures has resulted in limited availability of highly digestible, nutritious forage plant species. Some big game populations may be further stressed due to reduced availability of water at otherwise reliable springs, seeps and water developments. Unless drought conditions abate, it is anticipated many big game populations will experience further declines as recruitment and adult survivorship rates decrease.



Western and Northwestern Nevada

Severe drought conditions prevailed throughout much of western Nevada during the winter of 2006-07 and persisted into the summer of 2008 with a record set of over 90 days without measurable precipitation. During the winter of 2007-08 drought conditions were finally broken when a series of much needed storms moved through the state and provided much needed precipitation. As of this writing, in mid April 2008, water year precipitation levels for the Northern Great Basin are near 100% of average.

General range conditions were negatively impacted by drought conditions experienced during the 2006-07 winter and summer. Observations of shrub communities made during September 2007 pronghorn flights indicated that plants were stressed and in some locations large stands of bitterbrush had lost their leaves and appeared dead. Upland game bird populations, which can be a good barometer of range conditions, showed dismal production rates during this past summer indicating forage conditions during the spring and summer were poor. Current water year totals are near average however, we will need spring rains to provide for continued plant growth and recharge of springs and pit tanks.

Northeastern Nevada

As of early April 2008 most weather stations in the Eastern Region reported near average snowfall, water content in the snowpack and total precipitation. This is the second consecutive year of "near average to just below average" precipitation for the region. These 2 years of "near average" precipitation followed 2 years of above average snowpack. This year's highest precipitation index was for Clover Valley on the east side of the East Humboldt Range in Area 10 at 122% of average and the lowest average in the region was eastern Nevada that includes Ward Mountain, Berry Creek and Diamond Peak at 82% of average. The southern part of the region had a similar water year last year (below average). The biggest difference between the 2007-08 winter and 2006-07 was that this winter saw colder temperatures for a longer period of time which allowed snow cover to persist longer than usual. The other complicating factor that made winter survival more difficult for big game was a summer that was one of the hottest on record for most of the Eastern Region and included total summer precipitation which was well below normal. Vegetation was generally poor especially at the lower elevations due to the hot, dry conditions. The poor habitat, combined with heavy snow loads and below average temperatures for much of the winter produced above average mortality in both the young and adult segments of many big game populations. Recruitment was well below normal for most big game species in the Eastern Region in 2008. As usual, wildlife will be dependent on this year's summer moisture and temperature patterns that will determine future short-term population trends.

TABLE 1. Water basin climate data from SNOTEL monitoring stations throughout Nevada and the Sierra Nevada Mountains for snow water equivalent of snowpack as of 20 April 2008 and total water year precipitation from 1 October 2007 – 20 April 2008 in inches (Natural Resources Conservation Service).

BASIN		Snow Water Equivalent			Total Precipitation		
Data Site Name	Elev (ft.)	Current	Average	% of Avg	Current	Average	% of Avg
NORTHERN GREAT BASIN				**88**			**94**
Cedar Pass	7100	15.9	16.9	94	23.4	26.5	88
Disaster Peak	6500	0	4.8	0	17	15.8	108
Dismal Swamp	7000	27.1	27.1	100	37.4	39.2	95
Sheldon	5860	0	0		4.8	6	80
TRUCKEE RIVER				**69**			**74**
Mt Rose Ski Area	8801	27.4	43.5	63	39.4	45.5	87
LAKE TAHOE				**64**			**75**
Heavenly Valley	8582	15.3	26.6	58	22.7	26.7	85
Marlette Lake	7880	15.5	21.8	71	23.6	28.3	83
CARSON RIVER				**78**			**71**
WALKER RIVER				**84**			**82**
SALMON FALLS BASIN				**112**			**108**
BRUNEAU BASIN				**118**			**103**
Big Bend	6700	9.2	4.6	200	11.5	12.1	95
Wilson Creek	7120	15	10.2	147	20.8	19.1	109
OWYHEE BASIN				**99**			**96**
Fawn Creek	7000	14.4	17.7	81	24.5	25.5	96
Jack Creek Upper	7250	13.9	20.3	68	20.9	21.6	97
Laurel Draw	6697	9.7	4.1	237	21.4	20.1	106
LOWER HUMBOLDT RIVER				**100**			**97**
Big Creek Sum	8695	18.7	19.8	94	16.4	18.9	87
Buckskin Lower	6915	9.4	5.7	165	20.1	19.4	104
Granite Peak	8543	20.3	26.1	78	24.1	25.8	93
UPPER HUMBOLDT RIVER				**106**			**101**
Dorsey Basin	8100	13.9	12.9	108	22.2	22.6	98
Draw Creek	7200	10.9	6.5	168	15.4	14.1	109
Green Mountain	8000	12.3	11.1	111	21.5	22.6	95
Lamoille #3	7700	11.1	10.8	103	21.9	22.3	98
CLOVER VALLEY				**121**			**116**
Hole-in-Mountain	7900	22.3	18.5	121	28.7	24.8	116
EASTERN NEVADA				**85**			**73**
Berry Creek	9100	14.4	16.1	89	13.9	17.1	81
Diamond Peak	8033	0	2.5	0	10.9	16	68
Ward Mountain	9200	9	9	100	9.7	14.1	69

BIG GAME HERD

STATUS REPORTS

MULE DEER

Units 011 - 015, Northern Washoe and Western Humboldt Counties
Report by: Chris Hampson

Survey Data

Helicopter post-season surveys in November classified a total 506 mule deer with a ratio of 34 bucks/100 does/51 fawns. In 2006, surveys classified 597 mule deer with a ratio of 34 bucks/100 does/63 fawns. Due to the severe drought conditions mule deer were not concentrated on their typical upper elevation late summer and fall use areas. In many instances, mule deer dropped in elevation during mid summer and moved to those areas where they could locate better food, water and cover.

Due to mechanical problems with the NDOW helicopter, aerial composition surveys were not flown in the northwestern portions of the state during the spring of 2008. Ground surveys were initiated in Management Area 1 during the last week of March and the first week of April. Poor road conditions, warm temperatures and an extensive green-up made locating mule deer more difficult. A total of 298 mule deer were classified that resulted in a composition ratio of 30 fawns per 100 adults. Composition ratios for the various hunt units ranged between 27 and 32 fawns/100 adults.

Habitat

Much of northwestern Nevada suffered through one of the worst drought periods in Nevada History during 2006-07. The lack of moisture over an extended period seriously affected forage quality and water availability for mule deer and other wildlife. Mule deer adapted to the poor habitat conditions by moving to lower elevation north slopes or drainage bottoms with better forage and water. These are generally areas where runoff accumulates and where direct sunlight is shaded by the taller vegetation for the majority of the day. Areas with direct sunlight suffered the most from the lack of moisture and had very little to offer in the way of food and water. This caused mule deer distribution to change dramatically during the late summer and fall as they were forced off of the mountain tops that they normally occupy. Finally, the drought was broken when northwestern Nevada received significant snowfall during the months of December through mid February. However, a very dry March has left most basins in northwestern Nevada with yearly precipitation totals at below average levels.

No major wildfires were reported in Management Area 1 in 2007.

Population Status and Trend

Reduced recruitment in 2007-08 will result in decreasing trends for most Management Area 1 deer herds. The Interstate deer herd that spends the winter in Nevada hunt unit 015 also shows a decreasing trend in 2008. The only areas to not suffer significant habitat degradation due to the drought were habitats in hunt units 011 and the upper elevation habitats on the western portion of units 013 and 015. These areas generally received much more moisture than the other hunt units in Management Area 1 that are further to the south and east. Forage quality and water availability was observed to be much better in unit 011. The deer population estimate for Management Area 1 deer herds has decreased in 2007-08 and is estimated at approximately 4,000 animals.

Units 021, 022, Southern Washoe County
Report by: Chris Hampson

Survey Data

Post-season surveys were conducted in California hunt units X6B and X7A by the California Fish and Game in November 2007. A total of 495 mule deer were classified with a computed ratio of 33 bucks/100 does/37 fawns. The fawn ratio of 37 fawns/100 does is thought to be skewed low since a higher fawn recruitment rate

was observed during the spring survey. Spring mule deer surveys were conducted by California Fish and Game biologists. The total number of deer classified was 2,252 mule deer with an observed ratio of 38 fawns/100 adults. Surveys were conducted in both California hunt units and in Nevada hunt unit 021. No surveys were flown in Nevada hunt unit 022 due to mechanical problems with the helicopter.

Habitat

The winter of 2006-07 ended with below average totals for yearly precipitation and snowpack. The dry conditions continued through the summer and fall of 2007. Finally, in December 2007, significant snowfall was received throughout much of northwestern Nevada. January and early February also provided additional precipitation that added to the snowpack. However, a very dry month of March has left the precipitation and snowfall totals at below average levels. Additional moisture will be needed this spring and summer to ensure that mule deer habitat in northwestern Nevada recovers from the nearly 2 years of very dry conditions. Water availability should improve if the additional moisture is received.

No large wildfires were reported over the past year within Management Area 2 in Nevada. However, a large fire on the California/Nevada border just west of the Peterson Mountain Range will negatively affect migrating mule deer. The burned area was a very important staging area for mule deer as they made their way into Nevada from California. The important sagebrush and bitterbrush lost in this fire may not return as the burned area is very likely to be invaded by cheatgrass and other annuals. Mule deer will be out in the open with little to no cover as they make their way through the large burn and enter Nevada using the deer underpasses along Highway 395 North.

Population Status and Trend

Management Area 2 deer herds will experience stable to increasing trends in 2007-08. Continued human encroachment into important mule deer habitats will seriously impact mule deer herds in Management Area 2 over the next decade. The developments and related human activities will continue to shrink the amount of habitat that is left for mule deer and other wildlife living to the north and east of Reno/Sparks. The long-term outlook for mule deer populations in this Management Area is bleak.

Units 031, 032, 034, 035: Western Humboldt County
Reported by: Ed Partee

Survey Data

A post-season helicopter flight was conducted in mid November 2007. A total of 554 deer were classified yielding a ratio of 47 buck/100 does/43 fawns. The total number of deer classified during this survey is approximately 200 deer less then what was observed last year but is near the 5-year average for this area.

Due to mechanical problems with the departments helicopter spring deer composition surveys were conducted from the ground over a 2-week period during mid March 2008. These surveys resulted in a total of 439 animals classified which is a 60 percent decline from the 1,104 deer classified during the spring of 2007. Ratios obtained from these surveys averaged 50 fawns/100 adults indicating problems with this sample.

Habitat

Management Area 3 suffered during the summer months due to the lack of precipitation. The spring of 2007 started out fairly well then moisture subsided for the remainder of the year. Fortunately no more fires occurred in 2007 in area 3 that affected any of the useable habitats. With the lack of moisture deer changed there patterns and were difficult to locate on surveys. With the lack of summer precipitation, forage quality dropped influencing the condition of mule deer going into the winter months. The winter showed slightly above average precipitation as of 1 March. However if spring and summer rains are not received habitat degradation will continue.

Population Status and Trend

The 2008 pre-hunt population estimate is predicted to be approximately 4,100 animals. This population estimate is right in line with what we saw in this area last year. We have not seen any big increases within any of the units for this area. Fawn ratios dropped slightly with a minimal winter die off causing this population to remain static. These populations are still substantially lower then the historical highs mainly due to existing range conditions. At this time the limiting factor for this population seems to be available winter habitat that is available. If fires continue to burn in this area and recovery is hampered this unit will never reach those historical highs.

Unit 033, Sheldon National Wildlife Refuge: Washoe and Humboldt Counties
Report by: Chris Hampson

Survey Data

Post-season surveys classified a very small sample of 106 mule deer. This small sample had a computed ratio of 34 bucks/100 does/58 fawns. Drought conditions over the past 2 years have negatively impacted the quality of forage plants on the Sheldon. This past summer, many water sources dried up entirely or had significantly reduced flows. Mule deer were forced to leave the upper elevation habitats and mountain tops this summer due to the poor condition of the vegetation and the very dry conditions. The deer dropped in elevation and sought out areas where better feed and water were available. Due to this change in distribution, mule deer were very difficult to locate during and following the hunting season.

Due to major mechanical problems with the helicopter, no spring surveys were conducted on the Sheldon. Ground surveys were unsuccessful due to the extremely poor road conditions that prevented access to mule deer winter and transitional ranges. The major access road (8A) to the Sheldon remains closed due to snowdrifts and standing water as of the second week of April 2008.

The small sample obtained this past fall provided a buck ratio of 34 bucks per 100 does which is equal to the post-season buck ratio obtained last year. Buck ratios on the Sheldon have held steady over the past several years.

Since no recruitment data was obtained from the spring survey, a conservative 30 fawns per 100 adults was used in this year's estimation process. This recruitment level is similar to what was observed in surrounding hunt units in Washoe County. Surrounding Humboldt County deer herds had slightly higher spring fawn ratios.

Habitat

Bitterbrush plants at the upper elevations showed signs of being extremely stressed due to the drought. To the naked eye, the plants appeared to be dead but were still green when broken open. The plants did not receive enough moisture this past spring and summer to have the energy to grow leaves. Spring sources and lakebeds on the top of Rock Springs Table dried up completely this past summer. This had only been observed on a few occasions over the last twenty plus years.

No major fires were reported on the Sheldon this past year.

Population Status and Trend

Drought conditions on the Sheldon were severe this past summer and fall. Forage quality was poor in most areas. Fortunately, good moisture was received during the 2007-08 winter that will help to temper the effects of the drought and improve the condition of mule deer habitats on the Sheldon. However, more moisture is needed this spring and summer to ensure that water sources and lakebeds have water throughout the summer and fall. Drought conditions that led to poor habitat conditions and lower recruitment in 2007-08 will result in a declining trend for mule deer on the Sheldon.

Units 041, 042: Western Pershing and Southern Humboldt Counties
Report by: Kyle Neill

Survey Data

There were no post-season surveys conducted. Spring mule deer surveys were performed from the ground during the last week of March 2008. There were 61 mule deer classified throughout the Selenite, Trinity, Seven Troughs and Eugene Ranges. The resulting composition ratio was 27 fawns/100 adults, which is substantially below the 5-year average of 41 fawns/100 adults.

Habitat

Two large wildfires occurred in these unit groups in 2007. The Selenite Fire, Unit 041 burned a total of 1,881 acres. This fire mostly burned in the Selenite Mountain Wilderness Study Area (1,835 acres) near Selenite Peak and consumed large tracts of pinyon/juniper trees. In time, this fire maybe beneficial to mule deer by reestablishing shrub, forb and bunch grass species. The Tungsten Fire occurred in the Eugene Mountains, Unit 042 and burned 61,951 acres. The upper elevations (4,572 acres) were aerial seeded by the BLM with forage kochia, Wyoming big sagebrush and western yarrow. Recovery of these sites will be long-term and are dependent on moisture received and a reduction in livestock use, particularly in the Eugene Mountains.

Population Status and Trend

The 2008 mule deer population estimate for Units 041, 042 remains at 850 animals. This herd's population trend has been static since 2003. Field observations indicate more mule deer utilization in areas that were burned from the devastating wildfires of 2000-2001, however there are some exceptions. The mule deer that inhabit the Eugene Mountains continue to decline every year. This is supported by fewer field observations, poor fawn recruitment and a declining acreage of year-round and winter range caused by reoccurring wildfires that have converted most of the mule deer habitat into an annual grassland.

Units 043 - 046: Eastern Pershing and Southern Humboldt Counties
Report by: Kyle Neill

Harvest Results

The 2007 hunting season was the first year that Units 043-046 any legal weapons hunt 1331 was split into 2 16-day seasons. Seventy-five percent of the tags were issued to the early season, while 25 percent went to the late season. This strategy was initiated to lower hunter success in the early season, which should provide more hunter opportunity. Preliminary harvest results from 2007 suggest that this strategy worked by lowering the early season hunt 1331 success rate to 44% and the late season maintained a high success rate of 66%.

Survey Data

An aerial fall mule deer survey was conducted on 20 November 2007 in Units 043, 044 and 046. Mountain ranges surveyed during the 3 hour and 45 minute flight included the Sonoma, East and east side of the Humboldt. A total of 914 animals were classified, the most ever in Units 043-046. The classification data provided sex and age ratios of 35 bucks/100 does/49 fawns. The 2007 fall fawn ratio of 49 fawns/100 does is below the 3- year average of 56 fawns/100 does. The lower than average fawn ratio may be attributed to below average precipitation that was received in the 2006-2007 winter and spring, which resulted in deteriorated forage conditions.

Spring composition surveys took place for 3 days in March 2008 and were conducted from the ground. The survey area included the Humboldt and Sonoma Ranges and the Rose Creek area of Unit 044. A total of 541 mule deer was classified, which provided a fawn ratio of 39 fawns/100 adults.

Habitat

Several significant wildfires occurred in Units 044 and 046 in 2007. The Thomas Fire, Unit 046, Sonoma Range burned 18,327 acres in the canyon bottoms of Thomas, Water and Kluncy. An extensive reseeding effort was done by the BLM. A total of 1,556 acres were drill seeded and 6,092 acres were aerial seeded. Seeded species that will benefit wildlife include forage kochia, Wyoming big sagebrush and various species of wheatgrass. NDOW along with the Nevada Chukar Foundation planted sagebrush seedlings in Water Canyon. The Barrel Spring Fires burned a total 3,898 acres near the central portion of the East Range in the upper elevations. BLM aerial seeded 3,490 acres with forage kochia and small burnet. The Dun Glen Fire also located in the East Range burned 1,990 acres. Approximately, 610 acres were aerial seeded. In summary, these fires burned a total of 24,215 acres of which, 1,556 acres were drill seeded and 10,192 acres were aerial seeded. Recovery rates of these burned areas will be dependent on moisture received and reduced domestic livestock use.

Population Status and Trend

Eastern Pershing County's mule deer population is now estimated at 2,900 animals. This herd has been showing an increasing trend since 2004 and is approaching its all time high population estimate of 3,200 animals that was calculated in 2002. Confirmation of herd growth can be associated with record high survey samples with minimal survey time expended and percent 4-point or better bucks harvested for all hunts was 47% in 2007, which is above the long-term average of 40%. The 2008 spring recruitment rate of 39 fawns/100 adults will also allow for some population growth. Wildfires continue to convert year-round and winter habitat into annual grasslands. Average to poor winter range conditions in combination with a hard winter may eventually cause this herd to decline.

Unit 051, Santa Rosa Mountains: Eastern Humboldt County
Report by: Ed Partee

Survey Data

A post-season helicopter flight was conducted in mid November 2007. A total of 204 deer were classified in Area 5. The ratio for this flight was 46 bucks/100 does/60 fawns. The number of deer surveyed was slightly below the 5-year average. Both buck and fawn ratios are holding stable when compared to the 5-year average.

Due to Helicopter issues this year's spring composition surveys were conducted from the ground over a one week period in the middle of March 2008. A total of 850 animals were surveyed which is the highest number that has been surveyed since 1984. The ratio that resulted from this year's survey was 34 fawns/100 adults which is a little down from the last few years. Snow conditions during this survey period concentrated deer on their winter ranges making it much easier to survey.

Habitat

Area 5 has lost some major wintering areas for deer in the last ten years. This year is no exception with another 10,000 acres of habitat lost in Martin Creek and Red Hills portion of this unit. These 2 areas serve as key transitional as well as winter habitat for mule deer. The lost of habitat has definitely been the limiting factor for this herd. The dry summer months have taken its toll on the range conditions. Lack of summer moisture caused forage quality to dropped influencing the condition of mule deer going into the winter months. Despite above normal snow pack additional moisture in this area is needed to sustain the current populations for this area.

Population Status and Trend

The estimated population for unit 051 is showing a slight increase from the 2007 estimate. These increases are reflective due to both the fawn and buck ratios being above the 5-year average. This unit, with the amount of snow pack, saw a slight winter loss. Spring and summer moisture will be needed to sustain these

herds to their current level. In the future this population may experience highs and lows, however, increases may not be much over current levels. Until habitat conversions take place and some of the lost areas are recovered, we probably won't see large increases in this population.

Units 061 - 062, 064, 066 – 068, Independence and Tuscarora Ranges: Elko County
Report by: Ken Gray

Harvest Results

There were 820 rifle buck tags available in 2007. This represented a 129-tag decrease from the 2006 quota. The hunter success rate for all rifle buck hunters was 50%, which was identical to last year's success rate. Forty-seven percent of all of the bucks harvested supported 4-points or better. The past 5-year-average for 4-point or better bucks was 41%. The rifle hunt was split into 2 seasons for the second consecutive year. Ninety percent of the tags were offered in the first 16-day season while 10 percent were offered in the second 16-day season. Hunter success was 48% in the early season and 68% in the late season.

A total of 260 antlerless tags was issued for the 2007 season. The success rate was 50%.

Survey Data

A spring helicopter survey was conducted in March 2008. A total of 3,215 deer was classified; yielding ratio of 24 fawns/100 adults. This was 12 fawns/100 adults lower than the past 10-year-average and was the fourth lowest spring fawn ratio ever recorded. The fawn ratio has been below 25 fawns/100 adults for 3 of the past 5 years. As a follow-up to the helicopter survey, 2 ground surveys were conducted in March 2008 to document deer mortality on winter range. The objective of the surveys was to determine if there was significant adult mortality associated with the winter ranges. A total of 68 dead deer was classified as 48 fawns (71%) and 20 adults (29%).

Habitat

The most devastating fire in 2007 was the Murphy Fire which burned 550,000 acres along the Idaho-Nevada border. This fire burned crucial deer winter and transitional habitat in Unit 061 and in Idaho where 1000's of Nevada's deer migrate to survive winters. In addition, important deer winter range burned in the south Adobe Range, the Palisade area and the west side of the Snowstorm Range. In all, 125,134 acres burned in 2007. Since 1999, over 1,370,864 acres of rangeland have burned in Area 6, much of which was important deer habitat. The Department of Wildlife and the Elko BLM, with the help of several organizations including the Mule Deer Foundation and Reno NBU spent considerable amounts of money and effort to seed some of the most important areas burned during the summer of 2007. The Department of Wildlife seeded close to 11,000 acres of crucial deer habitat while the Elko BLM seeded over 50,000 acres of deer habitat.

Gold prices have risen to near $1,000.00 per ounce. These prices have facilitated mining and exploration throughout Area 6. The greatest potential impact to deer at this time is in the south Tuscarora Range. New mining activity is proposed within the last remaining migration corridors through this area which may severely restrict or even eliminate deer migration to the Dunphy Hills and other southern winter ranges. With increased pressure to develop these mines, it is unknown if effective mitigation measures will be implemented.

Precipitation received last year was well below normal and the summer was one of the hottest on record. As a result vegetation conditions were generally poor especially at the lower elevations. The hot dry weather also decreased the success of last year's seeding efforts. The exception was on the Snow Canyon Fire where seeding efforts for both sagebrush and bitterbrush were extremely successful. Seedings planted by NDOW and the Elko BLM in the past 15 years were used extensively by deer this past winter. A Satellite GPS radio collar study showed 30% of the deer collared made significant use of the Izzenhood and Dunphy seedings. Follow-up evaluations documented hundreds of deer utilizing the seedings.

NDOW consummated the purchase of over 4,000 acres of crucial deer winter range within the Izzenhood Range from Nevada Land and Resource Company. This habitat is one of the most important deer winter ranges in the State. This acquisition will protect the area from future development and will facilitate proper long-term management for mule deer.

Population Status and Trend

Heavy snow accumulations in January 2008 forced deer to concentrate on limited winter ranges.

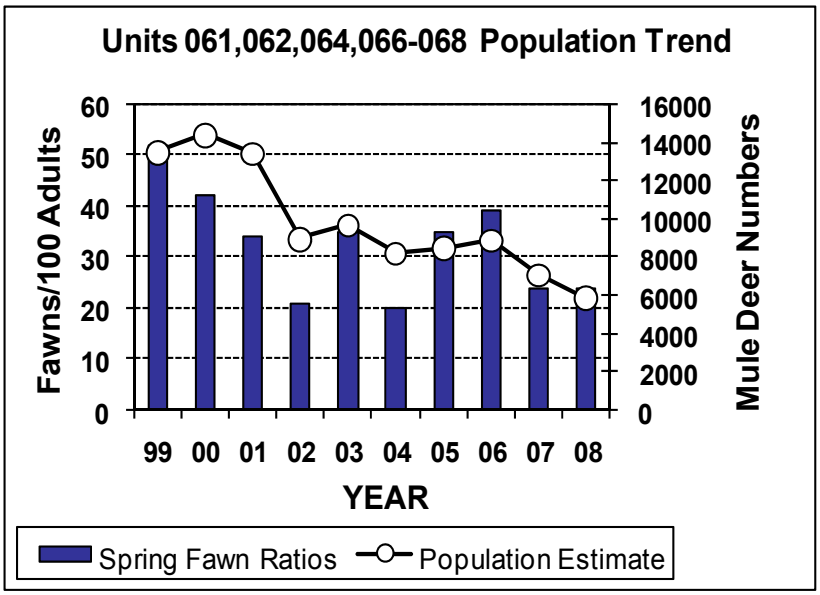


Figure 1. Population trend and fawn recruitment for the Area 6 deer herd, 1999 - 2008.

The fawn loss experienced in Area 6 was the second year in a row with significant fawn mortality. In addition, it is believed that 15 to 20% of the adult segment of the population was lost this past winter. This decrease is a direct result of the extremely poor habitat conditions that exist throughout the management area due primarily to fire. In many cases, deer had to move through 30 to 40 miles of burned habitat to just reach winter ranges. Once there, deer were confronted with poor conditions as most of the winter ranges had burned in the past. In those that hadn't, such as the Owyhee Desert, the sagebrush was in poor condition due the aroga moth infestation and lack of precipitation received prior to the winter. The poor habitat, combined with heavy snow loads and below average temperatures for much of the winter produced above average mortality in both the young and adult segments. The estimated population for the Area 6 Deer Herd decreased by 17 percent over last year's estimate and is now at the lowest population level ever documented (Figure 1). This herd is capable of increasing rapidly due to the excellent summer habitat associated with this area. However, the poor winter range will dictate long-term population levels as it has done for 5 of the past 7 years. The carrying capacity of the winter range habitat is now estimated at between 5,500 and 7,000 deer. This is about 40 to 50% less than it was just 9 years ago and 75% less than it was 35 to 40 years ago. Continued aggressive restoration efforts are needed to increase the winter habitat carrying capacity for deer in this management area. However, if fire suppression priorities and techniques are not addressed, and fires continue to burn out of control in this area, this deer herd will continue to spiral downward to the point that there will be little hope of ever restoring it.

Unit 065, Sulphur Springs Range: Southwestern Elko County
Report by: Russell Woolstenhulme

Survey Data

No Surveys were conducted within this unit in 2007. The average fawn ratio for the past 5 years was used in the population estimate.

Harvest Results

There were 310 first choice applicants for the Area 065 any legal weapon hunt (hunt 1331) compared to 315 first choice applicants for the 2006 season. Harvest for the 1331 hunt was similar for both years with 27 successful hunters in 2007 compared to 26 in 2006. That represents an 84% success rate during the 2006

season and 78% for the 2007 season. Of those deer taken during the 2007 seasons, 64% (65 deer) were 4-point bucks or better. During the 2006 deer season, 60% (29 deer) were 4-point or better.

Habitat

Long-term habitat conditions for deer are poor in Unit 065 due to the tremendous amount of habitat that has been lost to fires since 1999. A reseeding project of the 3000-acre Bailey Fire took place in the fall/ winter of 2007. Habitat rehabilitation in burned areas that once served as important deer habitat would help increase carrying capacity and facilitate overall mule deer production and survival.

Population Status and Trend

Poor habitat conditions have resulted in population levels that are below historic levels. The trend of this deer population is believed to be stagnant. The area is managed as a "Quality" hunt area and is capable of producing good bucks. The quota in this unit has been based on similar numbers of tags as in previous years.

Units 071 – 079, 091 : Northeastern Elko County
Report by: Kari Huebner

Harvest Results

A spilt in the Any Legal Weapon hunt was established in Areas 7 and 9 for the 2007 hunting season. The 2006 hunter success in the single any legal weapon season was 62%, whereas this year's early season was slightly lower at 51% and the late was higher at 69%, with an overall success rate of 54%. In 2006, the percentage of 4-points or better in the harvest was 42% overall, with 37% of those being harvested earlier in the season and 45% of those being harvested in the latter portion of the season. This year the early season showed a 33% harvest of 4-points or better and 54% in the late season. Conversely, in 2006, 30% of the bucks harvested were spikes or 2-points and in the 2007 early season, 31% were spikes or 2-points and only 18% were spikes or 2-points in the late season.

The archery season was also split in area 7 and 9 for the first time in the 2007 hunting season. The 2006 archer success with a single early season was 15% whereas this year's early season was slightly lower at 13% and the late was higher at 38%. In 2006, the percentage of 4-points or better in the archery harvest was 30% overall. This year with the season split season the early season showed a 47% harvest of 4-points or better and 58% in the late season. Conversely, in 2006 45% of the bucks harvested were spikes or 2-points and in the 2007 early season 37% were spikes or 2-points and 23% in the late season.

In general, the harvest data shows that by splitting both the any legal weapon and archery seasons, lower success was realized early and higher success was realized late. For rifle hunters, the percentage of 4-points or better was higher in the late season and the percentage of spikes or 2-points was higher early. For archers, the overall harvest of 4-points or better was higher in both the early and late seasons compared to last year and the percentage of spikes and 2-points was lower in both the early and late seasons.

For the any legal weapon hunt there were 1,403 first choice applicants for the early hunt and 912 first choice applicants for the late hunt. The total number of first choice applicants for the any legal weapon hunt was 2,315 in 2007 compared to 2,212 in 2006 suggesting some increased interest. For the archery hunt there were 161 first choice applicants for the early hunt and 73 first choice applicants for the late hunt. The total number of first choice applicants for the archery hunt was 234 in 2007 compared to 104 in 2006 indicating a significant increase in interest occurred.

Survey Data

Post-season flights were not conducted in this unit group this year. Spring surveys were flown in late February and mid March. A total of 2,814 mule deer was classified during the survey; yielding a ratio of 27 fawns/100 adults.

Habitat

The deer habitat in these unit groups has been reduced following the tremendous wildfires that have occurred in the area since 1999. Invasive weeds such as cheatgrass and mustard have invaded some of these areas and replaced much of the native vegetation that previously existed. However, even in areas where weed invasion has not occurred and perennial grasses and forbs are found, it will take years for the shrubs, mainly sagebrush and bitterbrush, to recover and expand back into these burned areas.

A good majority of the area 7 deer herd winters south of Interstate 80 in the Pequop Mountains. Unfortunately as many of these deer attempt to make it to their winter range from Jarbidge and outlying areas, they are often struck by vehicles either on Highway 93 or Interstate 80. The Nevada Department of Wildlife and the Nevada Department of Transportation are working collaboratively on current and future projects to reduce the amount of vehicle mortality that is occurring, including discussions regarding underpass and overpass options.

Population Status and Trend

This year's recruitment rate of 27 fawns/100 adults is well below the previous 5-year average of 41. The population model for Unit Group 071-079,091 predicts a pre-hunt adult mule deer population lower than the previous year. The low fawn recruitment can be attributed to minimal spring and summer precipitation last year that resulted in poor forage quality. That was then coupled with significant snow accumulations in January that restricted movement and availability of forage on winter ranges.

Even if environmental conditions in the future prove conducive to promote herd growth, the population may not be able to reach peak numbers that occurred in 1988 due to the significant loss of deer habitat from wildfires in much of Area 7 summer and transitional ranges. The Area 7 deer herd is not only recovering from impacts related to habitat loss, but 4 years of previous drought and the tough winter of 2001-02 as well.

Unit 081, Goose Creek Area: Northeastern Elko County
Report by: Kari Huebner

Survey Data

Neither fall nor were spring composition flights flown in this unit this year.

Habitat

This deer herd's winter range was significantly impacted by the West Fork Fire. The fire burned 154,943 acres of primary winter range. The fire burned very hot and left few islands of habitat. Although the area was intensely seeded this past winter, it will be many years until the brush community recovers in this area.

Population Status and Trend

Overall this is a relatively small deer resource in terms of resident deer populations with some migration from Area 7 and both Idaho and Utah. The magnitude of this migration is dependent on weather conditions during the hunting season and timing of the hunt, with later seasons more likely to experience increased deer numbers from migration. This herd has been managed as a trophy area in the past and with current challenges such as the reduction of winter range, the tags will be expected to remain conservative.

Units 101 - 108: Southern Elko and Northwestern White Pine Counties
Report by: Tony Wasley

Harvest Results

Area 10 contains nearly 25% of Nevada's mule deer population. Despite the fact that the late season usually averaged nearly twice the hunter success that the early season enjoyed, roughly twice as many first choice applicants applied for the early hunt in 2007 than the late hunt. The long-term average for early season hunter success was approximately 25%. However, in 2007 hunter success soared to 42%. The late season hunter success varies as snow fall amount and timing play a key role in late season hunter success. However, late season success was typically in excess of 50% and in 2007, late season hunters enjoyed 65% hunter success with 42% of the bucks taken being 4-point or better. Early and late season archery hunts had identical hunter success (16%) and nearly identical 4-points or better at 36% and 35% respectively. For specific 2007 hunting season results, please refer to Harvest Tables in the Appendix Section.

Survey Data

A post-season helicopter survey was conducted in November 2007. A total of 7,773 deer was classified; yielding ratios of 30 bucks/100 does/50 fawns. A spring helicopter survey was conducted in March 2008. During this survey 7,455 deer were classified; yielding a ratio of 23 fawns/100 does.

Weather and Habitat

Although above average moisture and snow pack occurred in 2005, Northeastern Nevada headed back into a drought in 2006. Snow pack levels and moisture content were well below the long-term average for the Ruby Mountains and adjacent mountain ranges. Despite there being drought-like conditions in Area 10 during the summer of 2007, the area was spared from the catastrophic fires that ravaged Area 6 in 2006 and 2007.

Population Status and Trend

The Area 10 population was up slightly from last year. The increase in Area 10 was not the result of fawn production and recruitment. The Area 10 population estimate was increasing because last year's harvest, intended to result in a post-season buck ratio of 28.5, was not only 17% higher than anticipated, but resulted in a measured buck ratio of 30 bucks/100 does. This indicated a population that was previously underestimated. Area 10 has been relatively insulated from the severe drought conditions that adversely affected many of Nevada's deer herds. Population estimates in Area 10 have increased for 7 of the last 8 years. Good age class representation was observed throughout the buck segment of the population and hunters should continue to see many mature bucks. Expectations for population growth remain high, and barring extreme winter conditions, we should continue to be optimistic about future trends of the Area 10 deer herd.

Units 111 - 113, Eastern White Pine County
Report by: Curt Baughman

Harvest Results

The total buck quota (including youth) was 1,422 tags for 2007. This was 95 tags above the 2006 quota of 1,327 tags. The 2007 reported harvest was 546 bucks and 43 antlerless deer. The 2006 reported buck harvest was 506. Resident rifle tags were split 92% early and 8% late. For the second consecutive year, hunter success for the early resident rifle hunt was 36%. Success for the late hunt was 58%. Resident archers achieved 41% hunter success. Overall hunter success for all buck-only hunts was 40% in 2007 and 38% in 2006. Both figures are high for this unit-group. High success rates were encouraged by drought conditions and good availability of bucks in the younger age classes.

Survey Data

A postseason composition survey was not conducted in 2007. In December 2006, a postseason sample of 2,213 deer was obtained from Units 111 and 113. The sample was composed of 340 bucks, 1213 does and 660 fawns; yielding ratios of 28 bucks/100 does/54 fawns. The spring 2008 aerial survey was flown in March in combination with a late winter elk survey. A sample of 2,872 deer yielded a ratio of 20 fawns/100 adults. This was the fourth lowest recruitment on record and was 18 points below the previous 10-year average (1998-2007) recruitment of 38 fawns/100 adults.

Habitat

Generous amounts of moisture were received from mid-2004 through mid-2006 resulting in improved water distribution and vegetation condition. These improvements contributed to 2 consecutive years of fawn recruitment near 50 fawns/100 does. During the last 5 months of 2006, precipitation measured at Ely by the National Weather Service totaled 56% of average. This was followed by 65% of normal precipitation during 2007. Only 47% of average moisture was recorded during the April through June period. Average temperatures were much warmer than normal during the months of March through August. This resulted in modest plant growth and early desiccation of grasses and forbs. Reduced cover and nutritional values were unfavorable for the survival of mule deer fawns. Use of mule deer habitat by domestic livestock and feral horses further compromised habitat values. A year and a half of drought conditions had negative affects on the body condition of both fawns and adults prior to the 2007-08 winter. The past winter brought consistent temperatures that were below normal. While meaningful storms did not arrive until late December and January, several storms brought high winds, cold temperatures and dry snow that accumulated over dry ground. Hard, drifted snow accumulated in many areas and persisted due to the prolonged cold. Vegetation on deer winter ranges was in poor condition. These winter conditions undoubtedly caused higher than normal losses of deer. From October 1, 2007 through late March 2008, the precipitation total for Ely stands at 57%. Local mountain Snotel sites and snow course data collected by NRCS have documented a snow pack that is closer to normal. Habitat conditions at low to mid-elevations may not improve this year unless precipitation levels increase substantially between now and early summer.

Long-term habitat potential for mule deer is slowly declining due to the encroachment of pinyon and juniper trees upward into mountain brush zones and downward onto bench areas. In some areas, degradation from severe drought has resulted in loss of native vegetation and expansion of cheatgrass and noxious weeds. Large-scale projects designed to control the encroachment of trees without imposing long-term impacts to shrub communities will be needed to reverse this trend. In addition, development of summer homes and a ski area threaten some of the most valuable summer mule deer habitat in this unit-group.

Population Status and Trend

This deer population expanded between 2004 and 2007 due to improved habitat conditions and favorable fawn recruitment. Drought conditions and a harsh winter have reversed the upward trend. The 2008 population estimate is lower than the 2007 estimate. Deer are in sub-par condition coming into the spring. Barring a substantial improvement in environmental conditions, reproductive potential in 2008 is expected to be average at best.

Units 114 – 115, Snake Range: Southeastern White Pine County
Report by: Curt Baughman

Harvest Results

The total 2007 buck quota (including youth) was 511 tags. This was 61 tags above the approved 2006 quota of 450 tags. The 2007 reported harvest was 217 bucks and 51 antlerless deer. The 2006 reported buck harvest was 185. The approved resident rifle quota was split 95% early and 5% late. Hunter success was 44% for the early hunt and 56% for the late hunt. Overall hunter success for all buck-only hunts was 42% in 2007 and 41% in 2006. The late-season muzzleloader hunt supported 53% hunter success.

Survey Data

A postseason composition survey was not conducted in 2007. In early January 2007, a 2006 postseason sample of 518 deer was obtained from Units 114 and 115 yielding a ratio of 41 bucks/100 does/63 fawns. The spring 2008 aerial survey was flown in March in combination with a late winter elk survey. This survey classified 786 deer resulting in a 22 fawns/100 adults ratio. This tied with 2003 and 2005 for the fourth lowest recruitment on record and was 10 points below the previous 10-year average (1998-2007) recruitment of 32 fawns/100 adults.

Habitat

Above-average precipitation was received from mid-2004 through mid-2006. Habitat conditions responded with improved water distribution as well as increased cover and forage values. Deer fawn recruitment in 2006 and 2007 averaged 58 fawns/100 does. Weather patterns, precipitation and forage conditions were similar to the 111 unit group described above. Snow course data collected by NRCS at higher elevations has documented a snow pack that is slightly above normal in the Snake Range. Habitat conditions at low to mid-elevations may not improve this year unless precipitation levels increase substantially between now and early summer.

Long-term habitat potential for mule deer is slowly declining due to the encroachment of pinyon and juniper trees upward into mountain brush zones and downward onto bench areas. In some areas the severe drought experienced during 2001-2003 has resulted in loss of native vegetation and expansion of cheatgrass and noxious weeds. Large-scale projects designed to control the encroachment of trees without imposing long-term impacts to shrub communities will be needed to reverse this trend. In addition, Southern Nevada Water Authority has purchased several ranches on the west side of Unit 115 and now holds grazing permits on allotments containing important mule deer habitat. It is hoped that improved grazing practices can provide benefits to mule deer.

Population Status and Trend

Five of the last 7 years witnessed below-average fawn recruitment including 3 of the lowest on record. The result was a slow downward population trend from 2001 to 2005. The strong recruitment observed in 2006 and again in 2007 reversed this trend and led to population expansion. The low fawn recruitment observed in 2008 indicates a declining population trend once more. Population modeling yields a 2008 population estimate that is lower than the 2007 estimate. Although this population retains a high buck to doe ratio, quota recommendations for 2008 hunts are expected to decrease. The health and productivity of this mule deer herd can rebound in the short term if precipitation totals improve significantly by mid-summer. Without increased precipitation to improve habitat conditions at middle and lower elevations, productivity potential is thought to be average or below.

Unit 121, North Egan, Cherry Creek Ranges: White Pine and Elko Counties
Report by: Russell Woolstenhulme

Harvest Results

The 1331 Any Legal Weapon hunt was changed to a split season for the 2007 deer hunt. The early hunt provided hunters with 16 days (October 5 – October 20) of hunting; the late hunt also provided hunters 16 days (October 21 – November 5) of hunting. The split season meant that the individual hunter had 7 less days to hunt from the standard hunt of previous years, but, the split season provided nine more days of deer hunting overall.

The 2007 split season provided opportunity for 23 more hunters (14%) afield during the 1331 hunt than for the 2006 hunt (188 vs. 165 respectively). There were 329 first choice applicants for the early hunt and 129 for the late (458 combined) compared to 403 first choice applicants for the 2006 season. Harvest for the 1331 hunt was identical for both years with 112 animals being harvested even with a 14% increase in hunter

opportunity. Hunter success for the single 23-day season in 2006 was 68% compared to 60% for the early and late combined in 2007.

Fifty-six percent (63 deer) of those deer taken during the 2007 split seasons were spike or 2-point bucks. During the early hunt, 62 spike or 2-point bucks were taken (58% of total early hunt take), while one 2-point and no spikes were taken in the late hunt (20% of total late season hunt). During the 2006 deer season, 43% (48 deer) were spike or 2-point bucks. A total of 55 deer were harvested prior to October 21 (the start of the 2007 late hunt). Of those deer, 28 (51%) were spike or 2-point bucks in 2006 compared to 58% in 2007. Of those bucks taken after October 21 in 2006, 33% percent were spike or 2-point bucks compared to 20% in 2007. These data suggest the goal of increasing hunter opportunity and still providing a more quality late hunt with low hunting pressure and higher hunter success and a greater opportunity to harvest a mature buck was met.

Survey Data

Spring mule deer composition surveys were conducted from the ground during March 2008. The Cherry Creek Range and North Egan Range were surveyed along the East Benches. Gleason Basin and other common spring use areas were not surveyed due to limited ground access. A total of 415 deer were classified in Unit 121, yielding a 30 fawns/100 adults ratio. The herd fared well coming out of a hard winter. The Unit 121 herd estimate declined little from last year. No fall survey was conducted.

Habitat

Precipitation during 2007 was below normal which resulted in poor range conditions across much of Unit 121. The winter of 2007-2008 received near normal precipitation, but prolonged cold temperatures resulted in persistent snow cover. The winter precipitation, while beneficial may not be enough to improve range conditions. Normal to above normal spring and summer precipitation could be a real boost to the Unit 121 deer herd. Habitat improvement projects and small fires in the unit are creating improved habitat. A horse round-up was conducted in the Cherry Creek Range and Butte Valley during the summer of 2006 which is also likely helping habitat conditions for deer.

Population Status and Trend

The spring fawn ratio of 30 fawns/100 adults resulted in a population estimate very similar to last year. Despite poor range conditions last year, and persistent snow through the winter, Unit 121 deer herds fared well with no notable decreases. If moisture regimes continue to be normal or above normal, improved range conditions could cause a favorable response in the deer herd. Unit 121 has so far avoided major impacts to deer habitat from range fires and man-made disturbances. Pinion/juniper encroachment is of some concern but small fires and habitat projects are slowing the effects. Mule deer carrying capacity is being improved by these small improvements. Barring any unforeseen setbacks deer populations could continue the upward trend that has been documented over the last few years.

Units 131 - 134: Southern White Pine, Eastern Nye and Western Lincoln Counties
Report by: Mike Podborny

Harvest Results

The 2007 Any Legal Weapon season was split into an early 16 day hunt from October 5 to October 20 and a late 16 day hunt from October 21 to November 5. The following analysis is for the Resident Any Legal Weapon hunt in 2007. The resident tags were split with 95% in the early season; 272 tags and 5% in the late season; 14 tags. The 2006 season was a single 23 day season from October 7 to October 29 with 263 resident tags. Hunter success was 52% early and 50% late compared to 61% in 2006. The harvest in the early hunt was broken out almost evenly with 36% spikes and 2-points, 30% 3-points and 34% 4-points or greater. The late hunt point class breakdown was 14% 2-points, 14% 3-points and 71% 4-points or greater. In 2006 the point class of the harvest was 26% spikes and 2-points and 50% 4-points or greater. Overall hunter success for both the early and late 2007 hunts was 51% compared to 61% in 2006. This indicates overall hunter success was reduced by 10 percentage points and met the goal of increasing hunter

opportunity and still provided a more quality late hunt with low hunting pressure and a greater opportunity to harvest a 4 point or better buck (34% early, 71% late).The lower hunter success in the late hunt was likely due to the very small number of tags and hunters choosing not to harvest.

Survey Data

There was no post-season herd composition survey conducted. The previous post-season herd composition survey was conducted by helicopter in January 2007 with 460 deer classified; yielding ratios of 31 bucks/100 does/60 fawns. The 2008 spring survey was conducted from the ground in March in the White Pine Range and Horse Range. There were 637 deer classified; yielding a ratio of 17 fawns/100 adults; much lower than the spring 2007 ratio of 39/100.

Habitat

Habitat conditions decreased in the short term with poor forage production and reduced water available for wildlife from the drought in 2007. The long term quality and quantity of summer ranges are slowly being reduced by Pinion/Juniper forests taking over brush zones lowering the carrying capacity for mule deer. Although this deteriorating condition also affects winter range, it is believed the effect on summer range has a greater impact to the deer herd. No major fires have occurred since 1999 but smaller fires in upper elevations in the last few years may benefit deer habitat in the long term.

Population Status and Trend

The expected harvest was nearly realized and there were no major shifts in the overall point class due to the split seasons in 2007. The spring recruitment in 2008 was the lowest on record and comparable to the very low ratio of 18 fawns/100 adults documented in 1994. Drought conditions in 2007 resulted in deer going into the winter in less than optimal body condition. The heavy snow and cold temperatures beginning in December 2007 and continuing through February 2008 resulted in very poor fawn survival. The 2008 population estimate decrease followed several years of a stable to increasing trend.

Units 141 - 145: Eureka and Eastern White Pine Counties
Report by: Mike Podborny

Harvest Results

The 2007 Any Legal Weapon season was split into an early 16 day hunt from October 5 to October 20 and a late 16 day hunt from October 21 to November 5. The following analysis was for the Resident Any Legal Weapon Hunt in 2007. The tags were split with 90% in the early season; 392 tags and 10% in the late season; 44 tags. The 2006 season was a single 23 day season from October 7 to October 29 with 331 tags. Early hunter success was 49% compared to 75% in the late hunt. The 2006 hunter success was 50% during the single season. The early hunt breakdown of the point class of bucks in the harvest was 40% spikes and 2-points, 35% 3-points and 25% 4-points and greater. The harvest in the late hunt was broken out with 29% spikes and 2-points, 39% 3-points and 32% 4-points or greater. In 2006, 41% of the deer harvested were spikes and 2-pointers and 27% were 4-points or better. The data indicates that hunter success was not lowered enough in the early hunt compared to the single long season (49% to 50%) to increase opportunity with the split seasons. The late hunt does provide for a quality hunt with low hunting pressure, higher hunting success and larger bucks harvested.

Survey Data

A post-season herd composition survey was conducted in December 2007 by helicopter under very good conditions with cold temperatures and good snow cover. The survey area included the entire Diamond Mountains, the Cortez Range and the Fish Creek Range. There were 1,900 deer classified; yielding ratios of 31 bucks/100 does/41 fawns. The previous fall survey was conducted in 2003 and the calculated ratio was 24/100/51 from a sample of 1,540 deer. Spring surveys were conducted in March 2008 from the ground with 822 deer classified in the Diamond Mountains and Fish Creek Range; yielding a ratio of 19 fawns/100 adults;

the lowest recorded in the area. In 2007 the spring ground survey resulted in 434 deer classified; yielding a ratio of 36/100.

Habitat

Habitat conditions declined in the short term with poor forage production and reduced water availability due to the severe drought of 2007 following several years of above average precipitation. In the long term deer habitat is being reduced by Pinion/Juniper forests crowding out the highly productive mountain brush zones with the browse community maturing and becoming less productive. Exploration for gold and oil has increased throughout the entire area. A very large molybdenum mine is being proposed for Mt. Hope in Unit 143. The mine will impact deer habitat in the immediate area of the mine site but is not expected to cause a major decrease of the deer herd in Unit 143. A 27,000 acre wildfire occurred in the north end of the Cortez Range during the summer of 2007. Previous major wildfires also occurred in 1999 and 2001 in Units 141 and 142. All these fires burned and converted extensive brush zones into monocultures of cheatgrass and other annual weeds reducing the value of these areas for deer and other wildlife. The cumulative effect of these fires has been a reduced capacity of the range to support deer. The post-fire seeding efforts to restore the most critical portions of these fires have been partial successful.

Population Status and Trend

Hunter success in both the early and late rifle hunts was higher than expected resulting in a higher than expected buck harvest in 2007. In spite of the higher than expected buck harvest, the observed post-season buck ratio was also higher than expected indicating the population was underestimated in 2007. There were no major shifts in the point class of bucks harvested in 2007 with the split seasons compared to 2006. The drought conditions that existed in 2007 resulted in deer entering the winter in less than optimum body condition. The deep snow and extreme cold temperatures during the winter resulted in a substantial loss of fawns with some adult mortality. The 2008 spring recruitment was the lowest on record and resulted in a population decrease from 2007.

Units 151, 152, 154, 155, Lander and Western Eureka Counties
Reported by: Larry Gilbertson

Harvest Results

During the 2007 season hunters killed 173 bucks and 5 antlerless deer compared to 190 bucks and 4 antlerless deer in 2006. The number of spikes and forkies in the harvest was 42 (24%) compared to 71 (37%) last year. This indicated hunting pressure was directed more towards the mature buck segment of the population (76%) in 2007 compared to 63% last year.

The following analysis is for the Resident Any Legal Weapon Hunt which was changed to a split season with an early and late hunt in 2007. There were 299 first choice applicants for the early hunt and 180 first choice applicants for the late hunt. The total number of first choice applicants for the Area 15 Resident Any Legal Weapon Hunt was 479 in 2007 compared to 488 in 2006. This suggests the change in season structure had little impact on applicant choices. It did show that the early hunt was 66% more in demand than the late hunt as a hunter choice. The odds of drawing a tag in the early hunt was 3 to 1 compared to 12 to 1 for the late hunt because of the number of tags in the quota for each hunt. Early hunters experienced 54% hunter success compared to 73% success late. Thirty-five percent of the bucks harvested in the early hunt were 4 point or better compared to 55% in the late hunt. Overall hunter success for both the early and late hunts was 54% compared to 65% in 2006. This indicates overall hunter success was reduced by 11 percentage points and met the goal of increasing hunter opportunity and still providing a more quality late hunt with low hunting pressure and higher hunter success and a greater opportunity to harvest a 4 point or better buck (35% early, 55% late).

Survey Data

Post-season helicopter deer surveys were conducted in December 2007. A total of 939 deer was classified; yielding ratios of 39 bucks/100 does/33 fawns. Last year's post-season survey was conducted from the ground and 135 deer were classified; yielding ratios of 17/100/63. Fawn production in 2008 was the lowest ever recorded for this unit group.

Spring surveys were conducted from the ground in early March 2008 but due to persistent snow cover only Unit 151 and Unit 152 were surveyed. A sample of 479 deer was obtained; yielding a ratio of 31 fawns/100 adults. The 2008 spring fawn/adult ratio was below average.

Habitat

The summer was hot and dry followed by an average winter with average snowpack. Vegetation condition will only improve if summer moisture is sufficient to stimulate leader growth and promote the forb and grass component of the vegetative resource.

Population Status and Trend

The Area 15 adult deer population experienced a difficult winter following a hot, dry summer. The deer were in less than favorable condition and did not receive the benefit of any significant level of fall green-up. Fawn ratios were documented to be below average in both the fall and the spring indicating the Area 15 deer population will experience a short-term decline. Quota recommendations will likely be reduced.

Units 161 - 164: North-Central Nye and Southern Lander and Eureka Counties
Report by: Tom Donham

Harvest Results

In 2007, the Any Legal Weapon mule deer hunt was changed from a single 23 day season to a split early/late season for Management Area 16. The early season was 16 days long and ran from October 5 – 20. The late season was also 16 days long and ran from October 21 – November 5. The early season was designed for those sportsmen who wish to hunt deer on a more frequent basis, and who are willing to deal with larger crowds and comparatively more difficult hunting conditions in order to do so. The late season is designed for those sportsmen who are willing to wait longer between drawing deer tags in order to hunt later in the fall, and with significantly fewer other hunters in the field.

The draw odds for the Early Resident Any Legal Weapon Hunt in Area 16 were 2 to 1 in 2007. Early season hunter success was 44% with a harvest of 29% 4-points or better. A total of 284 tags was allotted for the hunt.

The draw odds for the Late Resident Any Legal Weapon hunt were 10 to 1. Late season hunter success was 58% with a harvest of 33% 4-points or better. A total of 31 tags was allotted for the late hunt.

Late season success was noticeably higher than that of the early season, as was expected, despite unfavorable climatic conditions during the 2007 late hunt. Due to comparatively easy access to higher elevations in much of Area 16, late season hunters do not need to rely on weather to make deer more accessible in Area 16.

Survey Data

Neither post-season nor spring composition surveys were conducted in Management Area 16 during the reporting period. The previous post-season aerial composition flight was conducted in December 2006, and included Units 161, 162, and 163. A total sample of 587 deer was classified resulting in the ratios of 32 bucks/100 does/51 fawns. The previous spring composition survey occurred in April 2007 when a total of 342 mule deer was classified as 251 adults and 91 fawns.

Population Status and Trend

The Area 16 deer population estimate has remained relatively static lately due to lowered production and recruitment rates experienced most years since the mid to late 1990's. Fortunately, rates remained at maintenance levels through much of that period. From October 2006 through November 2007, central Nevada experienced extremely dry conditions. The lack of precipitation at critical times of the year greatly impacted mule deer and mule deer habitats over the past year. Poor body condition of mule deer entering the spring and early summer period severely hampered production for most deer herds in central Nevada in 2007. Although no surveys were conducted in Area 16, post-season and spring surveys conducted in Management Area 17, immediately to the west, showed record low production and recruitment rates. Production and recruitment rates in Area 16 have historically been similar to those in Area 17 on a year to year basis, and it is likely that Area 16 also experienced near record low recruitment this past year.

Although central Nevada has seen a return to more favorable moisture patterns beginning in December 2007, conditions will need to remain favorable for some time in order for recovery of mule deer herds and mule deer habitats to take place. Due to the impacts of drought, the Area 16 mule deer population is currently showing a downward trend. The Area 16 pre-hunt population estimate is approximately 3,600 animals.

Units 171 - 173: Northwestern Nye and Southern Lander Counties
Report by: Tom Donham

Harvest Results

In 2007, the Any Legal Weapon mule deer hunt was changed from a single 23 day season to a split early/late season for Management Area 17. The early season was 16 days long and ran from October 5 – 20. The late season was also 16 days long and ran from October 21 – November 5. The early season was designed for those sportsmen who wish to hunt deer on a more frequent basis, and who are willing to deal with larger crowds and comparatively more difficult hunting conditions in order to do so. The late season is designed for those sportsmen who are willing to wait longer between drawing deer tags in order to hunt later in the fall, and with significantly fewer other hunters in the field.

The draw odds for the Early Resident Any Legal Weapon hunt in Area 17 were 2 to 1 in 2007. Early season hunter success was 31% with a harvest of 27% 4-points or better. A total of 449 tags was allotted for the hunt.

The draw odds for the Late Resident Any Legal Weapon hunt were 4 to 1. Late season hunter success was 32% with a harvest of 29% 4-points or better. A total of 111 tags was allotted for the late hunt.

The Area 17 hunter success rate for the late hunt was not as high as anticipated in 2007 largely due to unfavorable climatic conditions. No appreciable precipitation was received prior to or during the late hunt, and mule deer in Area 17 remained at high elevations creating a situation nearly identical to the early hunt. Access to much of the high country mule deer habitat in Area 17 is more difficult than in some Management Areas, and weather plays an important role in increasing the availability of deer to sportsmen. In future hunts, if climatic conditions cooperate and Area 17 receives a decent amount of snow in late October/early November, late season success is expected to be noticeably higher than that of the early season.

Survey Data

A post-season aerial composition survey was conducted in Management Area 17 in late November 2007. During the survey, a sample of 1,810 mule deer was classified as 343 bucks, 1145 does, and 322 fawns. The sample size was the largest obtained during a post-season survey since 1986. The observed 28 fawns/100 does ratio indicates that the Area 17 mule deer population experienced record low fawn production in 2007. During the spring composition survey, conducted in late March 2008, a very modest sample of 509 mule deer was classified as 426 adults and 83 fawns. The observed 19 fawns/100 adults ratio indicates that while production rates were at a record low level in 2007, over-winter mortality was

comparatively low. The previous spring composition survey was conducted in April 2007, classifying 791 animals with a ratio of 33 fawns/100 adults.

Population Status and Trend

Recruitment levels have remained below average throughout central Nevada for a number of years, which has resulted in a static trend for most mule deer populations in northern Nye County recently. From October 2006 through November 2007, central Nevada experienced severe drought conditions. The lack of precipitation at critical times of the year greatly impacted mule deer and mule deer habitats throughout area. Poor body condition of mule deer entering the spring and early summer period, as well as poor range conditions, resulted in record low fawn production and recruitment in Area 17 in 2007.

Although central Nevada has seen a return to more favorable moisture patterns beginning in December 2007, conditions will need to remain favorable for some time in order for recovery of mule deer herds and mule deer habitats to take place. The record low production and recruitment rates experienced by the Area 17 deer population in 2007 have caused this herd to experience a decline in numbers. The Unit Group 171-173 pre-hunt adult deer population estimate is approximately 4,600.

Units 181 - 184: Churchill, Southern Pershing and Western Lander Counties
Report by: Jason Salisbury

Harvest Results

A split season for the any legal weapon hunt was initiated for the Area 18 mule deer hunt for the 2007 season. The percentage of tags allotted for the 2007 early season was 53% with an estimated harvest success of 30%; and for the late season 47% of total tags with an estimated harvest success of 50%. Preliminary harvest results indicate the actual success for the early season was 22% while the late season was 44%. These figures will be used to calculate quota's for the upcoming 2008 season. The early and late seasons were established to provide more opportunity for hunters, expecting a lower harvest success during the early season hunt structure. For Area 18 this hunt structure provided reduced congestion for hunters occupying traditional hunting areas.

Survey Data

An abbreviated early spring survey was conducted in 2008, and resulted in the classification of 127 mule deer. The sample resulted in a ratio of 35 fawns/100 adults. Areas surveyed included the Stillwater Range, Clan Alpine Mountains, and Desatoya Mountains.

Habitat

This year's habitat conditions have been a dramatic improvement compared to what was observed in the previous year. Adequate moisture coupled with upper elevational snow pack should improve range conditions significantly throughout the spring and summer months. The Area 18 mule deer herd over the long term has had to cope with extensive pinion juniper encroachment into browse areas supporting mule deer. The maturation of the browse community joined with the pinyon juniper canopy closing around it will cause the browse community to be less productive in the future for mule deer. Currently, projects are in the planning phase of development that will address some of these issues on a small scale. These projects are specifically located in Unit 184 to aid the mule deer herd in the Desatoya Mountains. Upper elevational fires in a pinyon and juniper woodland has shown to be beneficial to restoring brush species in the Clan Alpines Mountains and Stillwater Range. It is important following a fire to coordinate with the land management agency or private landowner to rehabilitate the burned area as best we can to benefit mule deer.

Population Status and Trend

This year's recruitment level of 35 fawns/100 adults is a 17% decrease in fawn recruitment compared to the 42 fawns/100 adults average observed in the 3 previous years. The fawn recruitment in 2008 although low

compared to previous years has allowed for a stable population trend. The decrease in fawn production observed in 2008 may be attributed to low optimal precipitation received during the 2007 season that would result in shoddier body condition going into the winter months. The fawn recruitment observed in the 3 previous years will carry this population through these lower recruitment rates and still provide opportunity for harvest. The conditions of the rangelands in the lower and upper elevations in the spring of 2008 are promising with the vitality of healthy forage and an increased observation of new leader growth in brush species as well as grass and forbs. Spring and summer moisture is required to allow for the continued sustainability of current range conditions.

Unit 192, Carson River Interstate Herd: Douglas County
Report by: Carl Lackey

Survey Data

The post-season survey flight took place on 2 January 2008. Survey results were fair with a little over 180 deer classified with ratios of 15 bucks/100 does/36 fawns. Climatic conditions were not favorable in the days prior to the survey, with very little snow to move the deer around, and this may have contributed to the low 15 bucks/100 does ratio observed. Similar results were found in Unit Group 194, 196. The spring survey results were slightly more favorable with 347 deer classified with a ratio of 33 fawns/100 adults. Winter fawn loss was modeled at only 4% and the number of fawns entering the winter of 2007-08 was undoubtedly low due to the drought conditions during the previous summer. The low buck ratios may have more to do with survey timing than actual numbers of male deer, i.e. with the majority of snowfall in Western Nevada not beginning until a few days after the survey took place it is likely that the bucks were still in the trees at higher elevations making them harder to locate. The fact that the survey flight took place just 2 days after the general rifle season ended may also have had an affect on the movement and location of the deer.

Habitat

Urbanization along the Carson Front continues to encroach upon winter range traditionally used by the Carson River deer herd and is the single most important issue facing deer herds in the Carson Range. What habitat that does remain above the home-line is in fairly good condition.

Population Status and Trend

The Carson River deer herd is in decline and has been for at least 2 decades. As with the Loyalton-Truckee/Peavine herd (Units 194, 196) the population includes Nevada's resident deer within the herd. Without intensive research it is not clear what percentage of the herd are resident deer but the number is estimated at about 20-30%. Under current habitat regimes the herd is probably at carrying capacity, a number which declines every year in correlation to increased urbanization. This trend in declining numbers will continue given the loss of habitat this herd has experienced on both sides of the state line. Regardless, fawn production and recruitment rates have been at maintenance levels for the carrying capacity, although there were lower numbers observed this year. With favorable climatic conditions in 2008, meaning a little spring precipitation, the herd should recover from last years drought if only to face more development and less habitat overall. The overall herd health appears good.

Unit 194, 196, Carson Range and Peavine Mountain Interstate Herd: Washoe and Carson City Counties
Report by: Carl Lackey

Survey Data

Biologists completed a fall composition survey flight in early January 2008 and classified 436 deer with a ratio of 11 bucks/100 does/38 fawns. A spring survey flight was accomplished in March 2008 which classified 613 deer and a ratio of 49 fawns/100 adults. The biased high spring fawn ratio was acknowledged (possibly due to bucks cohabitating with does on winter range compared to their lack of observability in the January survey). The fawns observed appeared healthy and in good condition although the numbers were

down for the year due to the severe drought conditions in 2007. As in past surveys the majority of deer in Unit 194 are found at tree-line and from Highway 431 north to Verdi. The deer in Unit 196 usually concentrate on the south facing slopes of Peavine Mountain and it was good to see a few animals here again following the fire of 2006.

Habitat

The extremely dry winter, spring and summer of 2007 was evidenced in the continuing low fawn ratios for the Carson Front units. Housing development and the accompanying human recreation associated with it are increasing on a yearly basis. The available habitat for wildlife is decreasing proportionately. This is the single most important issue facing the Carson Front deer herds. Fires and drought are temporary problems but the loss of habitat because of homes is permanent.

Population Status and Trend

This deer herd, known as the Loyalton-Truckee Interstate herd, is probably operating at carry capacity and has been doing so for the past 2 decades. The population limit placed on this deer herd by human encroachment/development is decreased every year because of the decline in available winter range.

The 2008 modeled population estimate includes Nevada's resident deer within the herd, a proportion estimated at 20-30%. Over the last few years this deer herd has appeared healthy with adequate fawn recruitment rates and generally good age cohort distribution. The long-term trend in numbers however continues downward, mostly due to habitat loss and fragmentation, and is mirroring carry capacity. This unit remains a much desired area to hunt deer for locals and non-residents, with high success rates and good point-class distribution.

Unit 195, Virginia Range: Storey, Washoe and Lyon Counties
Report by: Carl Lackey

Survey Data

Formal post-season and spring surveys have not been completed for Unit 195 since 2002. An incidental ground survey in October 2007 resulted in an observed ratio of 35 bucks/100 does/29 fawns. These numbers are similar to surveys conducted in adjoining units.

Habitat

The majority of land in this unit is privately owned and therefore difficult to manage for wildlife. Additionally, a significant portion is being developed, commercially and residentially. Furthermore, the unit will soon be separated north to south upon completion of a planned highway extending from Interstate 80 to Highway 50. The resulting fragmentation and loss of habitat has decreased this once migratory herd to a mostly resident herd.

Population Status and Trend

The population estimate for this deer herd is derived only from harvest statistics. Deer are fairly common along the Truckee River corridor on mostly private lands. Interest in Unit 195 appears to be fairly high with 292 first-choice applications for 49 tags including the youth and non-resident quota's. Most of this can be attributed to applicants wishing to hunt locally. Hunter success indicates an adequate number of deer for the tags sold. The population is thought to be stable to declining at this time

Units 201, 202, 204 - 206, Walker / Mono Interstate Herd: Douglas, Lyon and Mineral Counties
Report by: Jason Salisbury

Survey Data

In February 2008, NDOW conducted fall survey flights, classifying 1,304 mule deer. The sample consisted of 134 bucks, 868 does, and 302 fawns for a ratio of 15 bucks/100does/35 fawns. The observed low buck ratio for 2008 was attributed to some bucks shedding antlers prior to survey. The NDOW uses directed search patterns to locate deer groups. Mule deer were found at lower elevations trying to escape and seek refuge in areas free of snow. The precipitation that accumulated in the winter of 2007-2008 was slightly above average resulting in the observation of large groups of deer utilizing lower elevational benches. The snow persisted throughout the winter and spring months as a result of low daily air temperatures. This increased precipitation forced deer to move elevationally lower and for an extended period of time on to less desirable plant communities.

Spring survey flights were conducted in late March 2008 by California Fish and Game and NDOW personnel and produced a sample of 1,887 deer. The resulting ratio was 31 fawns/100 adults. During this year's spring survey mule deer were mainly located on traditional spring green-up which includes the toe slopes and benches.

Habitat

The condition of the range going into the winter of 2007-2008 was disappointing. The decreased precipitation on winter ranges in 2007 caused the browse community to be in a degraded state. The late winter of 2007 and early spring of 2008 had increased precipitation allowing for more short term favorable habitat conditions.

Wilderness areas are being proposed and pursued in Mineral County. These wilderness designations will restrict off road travel, wind energy and mining, but also may hinder future habitat projects such as water developments and vegetation enhancement projects. The habitat projects that are needed include improving deer winter ranges including reducing the pinyon and juniper woodland densities and allowing for a positive response to brush communities. It is also noteworthy to recognize that improving the habitat conditions on the winter range is only as important as improving degraded summer ranges. The California Department of Wildlife has studied some mule deer populations that utilize the Sierra Nevada's and particular specific mule deer from year to year. It has been realized that the mule deer's body condition coming off of summer ranges are already in a stressed state. So identifying the principal causes of stressed out mule deer would be helpful to address how to improve the summer range along with the winter range to reverse the downward trend mule deer are experiencing west wide.

Presently, migration corridors exist in the Wellington Hills area, Unit 201 and allow mule deer to migrate through to the winter ranges. However, migration corridors are starting to becoming negatively impacted by increased urbanization. Range improvements are needed in the Wellington Hills and Excelsior Mountains, Unit 206 to address problems associated with mule deer winter range.

Population Status and Trend

This year's fawn recruitment rate of 31 fawns/100 adults should maintain herd stability. Increasing recruitment levels from 2005 through 2007 resulted in a slight increase in population trend. The winter of 2007 and 2008 provided needed precipitation, but following drought like condition in 2007 resulted in a decreased fawn survival throughout the winter months. The population model for the Walker interstate herd predicts a pre-hunt adult deer population of approximately 5,460 animals. A single population estimate is calculated for the Walker/Mono Interstate herd including resident deer in eastern Mineral County. Nevada's apportionment is 30% of the harvest objective based upon the percentage of the herd that occupies winter range in Nevada and the amount of time the animals remain in the state. Harvest objectives are then distributed between Unit groups 201 & 204 and Unit groups 202, 205 and 206. This is a 40% and 60% split,

respectively. Deer in Unit 205 are actually yearlong residents but harvest levels are not significant enough to warrant a separate management approach.

Unit 203, Mason and Smith Valley Resident Herds: Lyon County
Report by: Jason Salisbury

Survey

A spring mule deer composition survey was conducted from the ground in April 2008 on the Mason Valley Wildlife Management Area (MVWMA). This survey resulted in the observation of 83 mule deer with a fawn ratio of 36 fawns/100 adults.

Population Status and Trend

The Unit 203 mule deer herd has declined from what was observed in the 1990's but has remained stable since 2001. Indicators of stability are demonstrated by the hunt 1331 any legal weapon 2007 success rate of 53% and percent 4 point or better bucks harvested for all hunts was 38%, both of which are above or at their 10-year averages of 51% hunt 1331 hunter success and 38% 4 points or better bucks harvested for all hunts. The observed 2008 spring recruitment rate will also allow this herd to maintain its population trend. Future outlook for this herd is threatened by the increasing trend of converting brush and other escape cover into onion and garlic fields. Furthermore, ongoing housing development and infrastructure within Mason and Smith Valleys will eventually impact this deer herd.

Units 211, 212: Esmeralda County
Report by: Tom Donham

Survey Data

Presently, no surveys are conducted in Area 21. Past survey efforts have not resulted in sufficient sample sizes for use in monitoring population dynamics.

Population Status and Trend

The Area 21 mule deer population has remained at reduced levels for many years. Very dry conditions experienced most years since the late 1990's have impacted production and recruitment rates throughout much of the area. Fortunately, production and recruitment has at least remained at maintenance levels most years. From October 2006 through November 2007, severe drought conditions plagued much of central Nevada. Even deer populations in the more northern reaches of central Nevada showed record low production and recruitment in 2007. Although surveys are not conducted in Area 21, it is expected that this same phenomenon occurred in Area 21, and will likely result in further reductions in the herd.

Although central Nevada has seen a return to more favorable moisture patterns beginning in December 2007, conditions will need to remain favorable for some time in order for recovery of mule deer herds and mule deer habitats to take place. Presently, the population estimate for Units 211 and 212 is approximately 300 adult animals.

Units 221 - 223: Northern Lincoln and Southern White Pine Counties
Report by: Mike Scott

Harvest Results

There were a total of 906 first choice applicants for 448 resident tags in the early hunt making the draw odds approximately 2 to 1. There were 219 of the 448 tag holders successful in harvesting bucks for a 49% success rate. Of the 219 successful hunters, a total of 70 harvested bucks were 4-points or better, which equates to 32%. There were a total of 640 first choice applicants for 24 resident tags in the late hunt making the draw odds approximately 27 to 1, making this the third most difficult deer hunt to draw for resident

hunters. Of the 24 hunters, 16 were successful in harvesting bucks for a 67% success rate. Of these, 7 were successful in harvesting bucks considered 4-points or better, which equates to 44%.

Survey Data

Post-season aerial surveys were completed during December 2007, and resulted in the classification of 1,017 deer. The sample consisted of 200 bucks, 565 does, and 252 fawns which results in a ratio of 35 bucks/100 does/45 fawns. The previous post-season sample was obtained in December 2006 and consisted of 1,898 deer with a ratio of 38 bucks/100 does/61 fawns.

Spring surveys were conducted from the ground during March 2008, and resulted in the classification of 362 deer resulting in a 30 fawns/100 adults ratio. Deer were difficult to classify as many of them were in transition back to summer range and were observed moving through the pinyon juniper forests.

Habitat

Degraded habitat conditions due to below average precipitation, pinyon juniper invasion, senescent shrubs, and overuse by wild horses is likely having detrimental effects on this herd. Increased OHV use due to the Silver State Trail and shed antler collectors may be having some effects on this herd as well. Dry conditions combined with heavy snow probably took some toll on fawn survival. Unfortunately, this area received large amounts of snow during the late winter. Due to warm dry conditions during the fall, deer did not go into winter in the best condition. Hopefully, the winter snow will result in improved habitat conditions and increased forage this spring.

Population Status and Trend

A computer-generated population estimate is developed from a population demography model that uses observed fawn and buck ratios, known harvest, and estimated survival rates by age classes and gender. The model estimated the 2008 pre-season population to be 4,600 compared to 4,900 in 2007.

Unit 231, Wilson Creek Range: Northeastern Lincoln County
Report by: Mike Scott

Survey Data

Post-season aerial surveys were conducted during December 2007 and resulted in the classification of 1,233 deer. These consisted of 245 bucks, 897 does, and 336 fawns for a ratio of 38 bucks/100 does/52 fawns. Yearling bucks comprised 50% of the bucks observed. The previous fall survey was done in December 2006 and classified 1,062 deer for a ratio of 39 bucks/ 100 does/61 fawns. Spring surveys were conducted from the ground and resulted in the classification of 398 deer, consisting of 295 adults and 103 fawns. This results in a ratio of 35 fawns/100 adults.

Habitat

Area 23 received approximately 60% of average annual precipitation during 2007. Unfortunately, a large portion of the precipitation the area did receive came as heavy snow during the late winter. As a result, mule deer fawn survival appears to be relatively low compared to recent years. Deer likely went into the winter in less-than-ideal condition as a result of the dry fall. Large-scale projects are proposed in various parts of Area 23 that may have detrimental effects on the mule deer population. The proposed water transfer will likely result in less water available for wildlife use over time. The scope of a proposed wind energy facility has been greatly expanded. The areas proposed for wind energy now include White Rock Mountain, Table Mountain, Mount Wilson, and Tub Peak. These areas comprise the bulk of the mule deer fawning habitat in Area 23, as well as all 3 of the places that are considered high quality deer hunting areas. If this project is approved the new roads that will be constructed and increased traffic related to construction and maintenance of towers will have serious detrimental impacts to mule deer habitat and populations. Of lesser importance, NDOW will lose the ability to survey these areas from the air. The current proposal is for

approximately 400 towers to be built across this area. Ongoing impacts to mule deer habitat include continued pinyon and juniper expansion into mountain brush communities and continued abuse of public lands by wild horses that are over appropriate management levels.

Population Status and Trend

A computer-generated population estimate is developed from a population demography model that uses observed fawn and buck ratios, known harvest, and estimated survival rates by age classes and gender. The model estimated the 2008 pre-season population to be 2,600 animals, compared to 2,800 in 2007.

Units 241 – 245, Clover, Delamar, and Meadow Valley Mountain Ranges: Lincoln County
Report by: Mike Scott

Harvest

There were a total of 195 first choice applicants for 39 available resident any legal weapon tags in the early hunt making the draw odds approximately 5 to 1. Twenty of the 39 hunters were successful in harvesting bucks for a 51% success rate. Of the successful hunters, 13 succeeded in harvesting a buck with 4 points or better, which equates to 65%. For the late hunt, a total of 555 resident hunters applied for the 5 available tags, making the draw odds 111 to 1. These odds indicate that this deer tag is the most difficult tag to draw for residents and more difficult to draw than all but 2 areas for Desert Bighorn Sheep and 2 areas for Rocky Mountain Elk. Additionally, 6 of 11 areas for resident California Bighorn Sheep have better draw odds than the late deer hunt in Area 24. Of the 5 tag holders, 3 were successful in harvesting bucks for a 60% success rate. Of the successful hunters, only one harvested a buck of 4 points or better which equates to 33%.

Survey Data

Post season aerial surveys were conducted in December 2007 and resulted in a total of 314 deer classified. The ratio of this sample was 39 bucks/100 does/39 fawns. The previous sample resulted in the classification of 286 deer and a ratio of 48 bucks/100 does/79 fawns.

No aerial spring flights were done, however, a sample of deer collected from the ground resulted in 67 deer classified as 52 adults and 15 fawns for a ratio of 29 fawns/100 adults.

Habitat

Water is very limited throughout this area, and is currently being proposed to be piped to areas further south to be used for development. Unit 242 is covered by dense pinyon and juniper forest across large expanses with little forage available for mule deer. NDOW and BLM are planning to install a number of water developments that should prove useful for mule deer. Burned areas in the Delamar and Clover mountains have opened areas of pinyon/juniper that will likely provide mule deer with expanded habitat in future years, unless they burn again before the areas are allowed to recover. The potential for this is high because of cheatgrass and red brome. This area received only about 60% of the average annual precipitation in the last year. Unfortunately, the bulk of the precipitation was received as heavy snowfall in late winter. This likely had a detrimental effect on the mule deer population, but not devastatingly so. Hopefully, the heavy snow will result in decent spring green-up that will mean improved forage conditions for mule deer.

Population Status and Trend

A computer-generated population estimate is developed from a population demography model that uses observed fawn and buck ratios, known harvest, and estimated survival rates by age classes and gender. The model estimated the 2008 pre-season population to be 710 animals, compared to 740 in 2007.

Units 251 - 253: South Central Nye County
Report by: Tom Donham

Survey Data

Presently, neither post-season nor spring surveys are conducted in these units. The last surveys conducted in the area occurred in 1998 and failed to yield a sufficient sample for analysis.

Population Status and Trend

Good quality mule deer habitat is very limited in Management Area 25. The majority of the habitat, and consequently, the majority of the deer population in Area 25, occurs in Unit 251. Deer habitat in Unit 251 continues to be impacted by feral horses, pinyon and juniper encroachment, and regular periods of drought. During the period from October 2006 through November 2007, severe drought plagued much of central Nevada. Record low fawn production and recruitment rates were seen in even the more northern reaches of Nye County where the quantity and quality of mule deer habitat is much better. Poor body condition of mule deer entering the spring and early summer period, as well as poor range conditions, likely resulted in very low fawn production and recruitment in Area 25 as well.

Although central Nevada has seen a return to more favorable moisture patterns beginning in December 2007, conditions will need to remain favorable for some time in order for recovery of mule deer herds and mule deer habitats to take place. Presently, the population estimate for Units 211 and 212 is approximately 300 adult animals.

Units 261 - 268, Clark and Southern Nye Counties
Report by: Patrick Cummings

Survey Data

Mule deer habitat in Area 26 is marginal; consequently, deer densities are low and below levels that warrant annual or periodic aerial surveys. The lack of composition data precludes development of a useful model that would demonstrate herd population dynamics and generate population estimates.

Habitat

Area 26 is in proximity to Las Vegas and other growing cities. Recreational pursuits that include OHV and mountain bike use and the resultant proliferation of roads and trails coupled with suburban sprawl, serve to degrade mule deer habitat. Mule deer habitat is also impacted by feral horses and burros.

In June 2004, the Humbolt-Toiyabe National Forest issued a Decision Notice and Finding of No Significant Impact for Spring Mountains National Recreation Area Motorized Trails Designation Project. The decision to implement alternative five (with modifications) as summarized in the respective Environmental Assessment involves minimal closure of newly established roads. Thus, the recently authorized management prescription for motorized trails ensures the status quo for the foreseeable future.

Population Status and Trend

The mule deer population in Area 26 likely experienced a decline as result of drought conditions that have persisted from November 2005 through October 2007. During this period, mule deer coped with reduced availability of quality forage, and subsisted largely on cured and woody vegetation low in digestibility and nutritive value. Thus, the consequences of mule deer in Area 26 surviving on a lower nutritional plane were reduced reproduction and recruitment.

As of this writing in March 2008, environmental conditions have improved due to near normal precipitation receipts in late 2007 and early 2008. More recently however, the brief period of normal precipitation has

been eclipsed by return to drought conditions in February and March 2008. In its seasonal outlook, the National Weather Service forecasts drought conditions to persist or intensify through June 2008.

Units 271, 272: Southern Lincoln and Northeastern Clark Counties
Report by: Mike Scott

Harvest

A total of 26 tags were issued for the resident and nonresident any legal weapon hunt. A total of 16 out of the 26 tag holders were successful for a 62% success rate. Seven of the successful hunters harvested deer of 4 points or better which equates to 44%.

Survey Data

No mule deer surveys were conducted in Units 271 or 272 during the reporting period. Mule deer densities are low enough that standard surveys do not result in enough data for analysis. The harvest strategy is based on hunter demand and success.

Habitat

Water developments installed with the assistance of sportsmen's' groups, coupled with a few natural springs, provide limited suitable habitat for mule deer. Large-scale wildfires burned in both the Mormon and Virgin Mountains during the summer of 2005, which will have both short and long term detrimental effects on the Mule Deer population in these areas. Areas of suitable habitat hold limited populations of Mule Deer mainly in the Virgin Mountains, although deer are observed in the Mormons Mountains on occasion.

Unit 291, Pinenut Mountains: Douglas County
Report by: Carl Lackey

Survey Data

No formal surveys were conducted in this unit during the fall of 2007 or the spring of 2008.

Habitat

Loss of habitat, and access to available and adequate habitat in this unit continue to keep the deer population at low levels. Moisture levels in 2007 were some of the lowest on record and it is expected that this will be displayed in the fawn ratio. Expansion of the pinion forest over the past few decades, livestock grazing practices, increased human recreational activity and increased urbanization on the perimeter with corresponding traffic have all contributed to loss of habitat and the decline of mule deer in Unit 291. Significant portions of the unit contain monocultures of pinon-juniper, much of which is dead. Habitat improvement projects have been recommended to reduce the pinon-juniper coverage.

Population Status and Trend

There is no modeled population estimate for this herd. This population is believed to be stable, but has the potential to increase under more ideal habitat conditions. Many of the deer, particularly in the northern part of the management area, are resident deer. The population for Area 29 is well below the historic levels recorded for the Pinenut Mountains and it is probably well below carrying capacity. The loss of travel corridors, due to Highway 395 traffic and housing development from Topaz Ranch Estates up along the eastern side of Carson Valley, into the unit are the primary cause for this.

Still, it is an area that offers a local hunting opportunity with a good buck point-class available and decent hunter success. This is evidenced by demand in the form of 363 first-choice applications for the 84 available tags combing all hunts.

PRONGHORN ANTELOPE

Units 011 - 015, 021, 022, Washoe and Western Humboldt Counties
Report by: Chris Hampson

Survey Data

Helicopter aerial composition surveys were conducted during the second week of September 2007. The survey sample size obtained this past year increased nearly 300 animals primarily due to an increase in survey effort. Average composition ratios obtained for Management Areas 1 & 2 were 36 bucks/100 does/44 fawns. Buck ratios remained similar to the past few years while fawn ratios dropped an average of 7 fawns per 100 does this past year. The 2006 average ratio was 36 bucks/100 does/51 fawns.

Table 1. 2007 post-season pronghorn composition for Washoe County.

Unit	Bucks	Does	Fawns	Total	Bucks/100 Does/Fawns
011	54	143	86	283	38/100/60
012-014	99	315	107	521	31/100/34
015	105	260	126	491	40/100/48
021-022	31	75	30	138	41/100/40
2007 Totals	**289**	**793**	**349**	**1433**	**36/100/44**
2006 Totals	217	609	313	1139	36/100/51

Pronghorn fawn ratios varied considerably across the state this year due to severe drought conditions. Higher elevation habitats that received considerably more moisture and thus were in good condition had very good fawn production and recruitment in 2007. Hunt units where recruitment was observed to be very strong were in Unit 011 and the upper elevation habitats in the western portion of Unit 013. Fawn ratios in Unit 011 were once again very strong at 60 fawns per 100 does. The upper elevation habitat on the western portion of Unit 013 had much higher fawn recruitment than the rest of the unit group and was measured at 63 fawns per 100 does**.** This higher fawn recruitment value skewed the average fawn ratio for the 012-014 unit-groups slightly higher. Units 015, 021 and 022 continue to show above-average recruitment in the 40 to 50 fawns per 100 does range. Hunt units in which the drought conditions were most severe also had the lowest observed recruitment rates. These areas were in hunt units 012, the central and eastern portions of Unit 013, and in hunt Unit 014. Fawn recruitment in these areas was observed to be between 20 and 27 fawns per 100 does. This rate of recruitment is considered below the level needed to maintain pronghorn numbers and will result in decreasing trends for those pronghorn populations.

The average buck ratio for Management Areas 1 & 2 remained static in 2007. Buck ratios remain strong in hunt units 011, 015, and in unit group 021, 022. Ratios are approaching management objectives in hunt unit group 012-014 and averaged 31 bucks per 100 does.

Despite, the fact that nearly 300 more animals were observed and classified during post-season surveys, pronghorn were actually more difficult to locate due to the drought conditions. Pronghorn were forced to leave traditional summer ranges on many of the lower elevation habitats due to the lack of quality forage and dependable water sources. This made locating animals much more difficult. More helicopter time was expended in order to search and locate the scattered groups of pronghorn. The average group size was also smaller this past survey effort than what has been observed in recent years.

Habitat

Severe drought conditions prevailed throughout much of western Nevada during 2006 and into the winter of 2007. Exceptions to this were in the extreme northwestern portion of the state in Unit 011 and the upper elevation habitats on the western edge of Unit 013. Lower elevation habitats to the east and southeast of

these areas were very dry and habitat conditions were poor. Competition between pronghorn, feral horses and cattle was severe during the summer of 2007. Numerous complaints were received from hunters who had observed horses chasing and preventing pronghorn form accessing water sources. The animals were then forced to move to other water sources where competition was less intense. Many of these observations of competition between antelope and horses at water sources occurred in the drier environments such as hunt Unit 012.

Both water year precipitation and snowfall totals were well below-average as of January 1, 2007. The Nevada Water Supply Outlook Report showed precipitation totals for basins within Management Areas 1 & 2 that ranged between 51% and 85% for Water Year Percent of Average. Snow pack totals were equally dismal and ranged between 56 and 62% of average. Drought conditions continued through the summer and fall of 2007. A few cold fronts came through the area in October but did not provide the significant moisture needed to temper the affects of the extended drought. Finally, the drought was busted after most basins in western Nevada received significant snowfall during the months of December, January and February. As of this writing, Water Year Precipitation and Snow pack totals are just slightly below-average for the period and the basins should end the precipitation season with near or just below-average precipitation receipts.

Population Status and Trend

The severe drought that persisted for almost 2 years was one of the worst drought periods on record. Habitat conditions deteriorated throughout northwestern Nevada as the drought continued. Pronghorn does are believed to have entered into the breeding season in fair condition but fawn mortality through the summer of 2007 was believed to be fairly high. Pronghorn movements and energy expenditures increased as water sources continued to dry up. This extra movement can be stressful on fawns during the hot summer period. The lower recruitment values observed during composition surveys in September proved that the extended drought had negatively impacted many of the pronghorn populations in northwestern Nevada. The only areas in western Nevada to not experience harsh drought conditions were hunt units 011 in the extreme northwestern portion of the state and the upper elevation habitats in the western portions of hunt units 013 and 015. These areas received much more moisture than the lower elevation habitats to the south and east. Recruitment values were significantly higher in these areas. Hunt Unit 011 typically receives much more moisture than other hunt units in Washoe County. Recruitment values in Unit 011 have averaged between 60 and 70 fawns per 100 does in 5 out of the last 6 years.

Significant snowfall in many areas of northwestern Nevada during the winter of 2007-08 will help to alleviate the affects of the drought. Fortunately, most crucial pronghorn winter ranges were devoid of snow for much of the winter. Pronghorn survival through the winter of 2007-08 is expected to be high. The improved precipitation receipts this winter should enhance habitat conditions for pronghorn. Water availability and forage quality should be much improved over 2006-07. Pronghorn populations in hunt units 011, 015, 021 and 022 will experience static to increasing trends. However, pronghorn populations that were most affected by the drought will experience static to downward trends this year. These include populations in hunt units 012, 013, and 014.

Units 031, 032, 034, 035, 051: Humboldt County
Report by: Ed Partee

Survey Data

The 2007 survey for pronghorn was conducted during mid-September for both areas 3 and 5. A total of 1,299 animals were classified during these flights yielding a ratio of 34 bucks/100 does/39 fawns. This is an increase from what has been observed over the last 2 survey periods. The 2005 and 2006 survey resulted in 971 and 1,039 animals observed, respectively. Overall numbers for both management areas recorded a slight decrease in both buck ratios and fawn ratios. Extremely dry conditions experienced during the summer and winter 2006-07 forced a change in pronghorn use patterns and made it difficult to locate large numbers of animals in traditional use areas.

Habitat

The winter and spring of 2006-07 was one of the driest on record and created a dramatic change in range conditions from what was observed in Humboldt County during the past 5 years. The summer was extremely dry resulting in many of the water sources and pit tanks going dry throughout much of the area traditionally used by pronghorn. Grasses and forbs that pronghorn rely on during spring and early summer either never geminated or desiccated early in the spring, forcing animals to search for forage in nontraditional use areas. Humboldt County had a few minor fires that occurred during the summer of 2007. Some of these fires were responded to very quickly which minimized the amount of acreage lost. The Red Hills Fire in Management Area 5 affected some additional spring and summer habitat. If a large snow event and extreme winter conditions occur we may sustain great losses of these herds due to the loss of wintering habitat.

Population Status and Trend

Humboldt County pronghorn populations have shown an increasing trend over the past 5 years. Current population estimates for Management Area 3 and 5 based on recruitment levels measured in the fall of 2006 indicate a static trend in pronghorn numbers. Extremely dry conditions experienced during the winter, spring and summer of 2006-07 were probably a major contributor to decreased fawn ratios. Precipitation received during this past winter was near average levels. With a small amount of spring moisture fawn ratios are expected to be at or above maintenance levels.

Unit 033, Sheldon National Wildlife Refuge: Washoe and Humboldt Counties
Report by: Chris Hampson

Survey Data

A total of 327 pronghorn were classified as 108 bucks, 173 does and 46 fawns. This sample provided a computed ratio of 62 bucks/100 does/27 fawns. This is the second consecutive year of low recruitment for the Sheldon pronghorn herd. In 2006, the recruitment was measured at 22 fawns per 100 does. Drought conditions on the Sheldon over the past 2 year period can be blamed for the poor recruitment. The drought seriously impacted forage quality and water availability for pronghorn on the Sheldon. A good example of the significant affects of the drought was observed on Rock Spring Table where lake beds and other spring sources that normally hold at least some water through the summer and fall months were dried up completely by the end of the summer. This is an unusual occurrence that has been observed only 2 or 3 times over the past twenty plus years. Pronghorn were forced to drop off of the Table to lower elevation habitats with permanent water and better forage.

Buck ratios continue to remain very high on the Sheldon. A total of 74 bucks were harvested from the Sheldon in 2007. This year's sample had a computed ratio of 62 bucks per 100 does. In 2006, the observed buck ratio was 60 bucks per 100 does. Composition surveys conducted in 2004 and 2005 resulted in buck ratios in the low 50's. Buck ratios may be skewed to the high side due to the timing of the surveys which occur during the rut. Preliminary questionnaire data suggest that over 30% of the harvested bucks had horns longer than 16 inches and 61% had horns longer than 15 inches. This would indicate that trophy quality bucks were available during the hunting season despite the severe drought conditions.

Habitat

Habitat conditions were poor throughout the Sheldon this year. Two consecutive dry years have negatively affected forage quality and the number of water sources available to pronghorn. Increased precipitation receipts during the winter of 2007-08 will help to alleviate some of the affects from the extended drought. Many of the springs and seeps that went dry this past summer should once again be flowing. Lake beds and playas should also be at least partially filled with water through the hot summer months. Forage quality will improve with the increase in soil moisture. Additional spring and summer precipitation will ensure good quality forage and plentiful water is available to pronghorn through the late summer and into the fall.

Precipitation records from the Guano Snotel weather site on the Sheldon indicated that as of September 30th, 2007, the area had received approximately 72% of average for total accumulated precipitation for the year. The area received a total of 7.2 inches of precipitation in 2007. The long-term average (1990-2007) is 9.99 inches. Since October 1, 2007 the Sheldon has received approximately 3.9 inches of additional precipitation through the first week of March 2008. This would put the Sheldon at slightly below average for this point in the water year which runs October 1 through September 30. The Sheldon finally received significant snowfall in December after a very dry summer and fall. More storm fronts in January and February added to the snow pack The much needed moisture will help habitats to recover from the nearly 2 years of well below-average precipitation receipts.

Population Status and Trend

The 2007 recruitment level of 27 fawns per 100 does will result in a continued decreasing trend for the Sheldon pronghorn population. Overall herd numbers dropped slightly from the previous year's level. The population estimate for the Sheldon pronghorn population now stands at 1,400 animals.

Units 041, 042: Western Pershing and Southern Humboldt Counties
Report by: Kyle Neill

Survey Data

Composition surveys were conducted from the ground during the last week of October 2007 (Table 1). Mountain Ranges and areas surveyed were Selenite, Nightingale, Truckee, Sahwave, Kamma, Seven Troughs, Trinity, Majuba, Eugene, Poker Brown Wash and Jungo Farms.

Table 1. Pronghorn Composition Survey Results for Units 041 and 042.

Year	Bucks	Does	Fawns	Total	Bucks/100 Does/Fawns
2006	172	402	212	786	43/100/53
2007	**188**	**342**	**154**	**684**	**55/100/45**
5-year average	122	282	136	540	43/100/48

The observed 2007 buck ratio of 55 bucks/100 does is the highest post-season buck ratio since 2000 when the ratio was measured at 53 bucks/100 does. This increase may be attributed to the high recruitment rates that were experienced in 2005 and 2006.

Habitat

In 2007, 3 big game guzzlers were constructed in the Trinity Range, between Trinity Peak and Trinity Pass. In the past, antelope that occupied this area were dependent on a few natural water sources. These additional sources of water should allow pronghorn to expand in numbers and distribution. These developments should also provide dependable water sources during dry years.

One major wildfire occurred in Unit 042 in 2007. The Tungsten Fire located in the Eugene Mountains burned 61,951 acres. BLM aerial seeded 4,572 acres in the upper elevations. Seeded species included forage kochia, Wyoming big sagebrush and western yarrow. Antelope, which extensively utilize the Eugene Mountains year-round, were forced to use habitat around Rye Patch Reservoir and the Humboldt River this past winter. It is believed that the Tungsten Fire will not negatively affect this antelope herd. This is based on the fact that the antelope population in the Eugene Mountains increased dramatically after the wildfires that occurred in 2001 which increased annual grasslands that contained an abundance of forbs.

Population Status and Trend

The winter of 2006-07 was extremely dry and many of the unit group's water sources showed reduced flows by the end of the 2007 summer. Observations of wintering pronghorn numbers from this past winter indicate

that the herd survived the dry summer of 2007. Future expansion of this herd may be reliant on water developments that will enable antelope to utilize both summer and winter habitat on a year-round basis.

Management Area Four's western pronghorn antelope population has continued to grow since 2004. This herd is now estimated at 1,500 animals, up from last year's estimate of 1,400 animals. The steady increase in this herd has been fueled by good fawn production and recruitment rates, which have averaged 48 fawns/100 does for the past 5 years.

Units 061, 062, 064, 071, 073: North Central Elko County
Report by: Ken Gray

Survey Data

A ground survey was conducted in the 061-073 Unit Group in September of 2007. A sample of 592 pronghorn was obtained; yielding ratios of 46 bucks/100 does/49 fawns. The buck ratio was 7 bucks above the 10-year-average. The fawn ratio was 7 fawns below the previous 10-year-average (Table 1).

Table 1. Observed buck ratios, fawn ratios and sample size for pronghorn in Units 061-073.

Parameter	2007	2005	1997-2006 Average
Bucks/100 does from fall surveys	46	40	39
Fawns/100 does from fall surveys	49	49	56
Sample size from fall surveys	592	938	581

Habitat

The winter of 2006-2007 produced below average precipitation levels while the summer of 2007 was one of the driest and hottest on record. These climate conditions resulted in very poor vegetation conditions throughout the unit group.

Approximately 44,000 acres of antelope habitat burned within this unit group during the summer of 2007. The most damaging fire burned about 2,000 acres of crucial winter range on the south end of the Adobe Range. In addition, the 550,000 acre Murphy Fire burned habitat in Idaho that provided winter habitat to antelope that summered in Nevada.

Higher elevation areas such as Sunflower Flat and the south end of the Independence Range should recover within the next 5 years and may actually provide improved antelope summer habitat if proper livestock grazing practices are implemented. The winter ranges however may never recover due to cheatgrass and other weed domination.

In response to the fires, the NDOW and the Elko BLM seeded the south end of the Adobe Range with native grasses, sagebrush and forage kochia. In addition, approximately 5,000 acres of crucial antelope winter range in Unit 073, that burned in 2006 but showed no signs of recovery, were seeded again during the winter of 2007 in an attempt to restore crucial winter range values.

The aroga moth has damaged the sagebrush component on hundreds of thousands of acres of habitat within this unit group. It is believed that the sagebrush damaged by this moth contributed to the huge fires seasons experienced in 2006 and 2007.

Houses and fences continue to be built within crucial winter range, especially near Ryndon. A horse farm was constructed within the center of the most important winter range north of Deeth consuming close to 200 acres of prime antelope habitat. This urbanization, combined with the loss of winter habitat by fires, will severely limit the number of antelope this unit group can support in the future.

Population Status and Trend

In the past 2 years, a total of 653 antelope have been removed from this herd through either trapping or harvest. Consequently, the population estimate has decrease by 43% from the 2005 level and is now estimated to be approximately 780 animals (Figure 1). This is within the estimated carrying capacity of the winter range. This was evident during this past winter when antelope were congregated in the remaining sagebrush areas that had not burned. However, antelope mortality appeared to be minimal and antelope did not come into the urban areas as they have during past harsh winters. The objective of the 2008 harvest recommendations will be to maintain the population at approximately 750 antelope, compatible with their winter range.

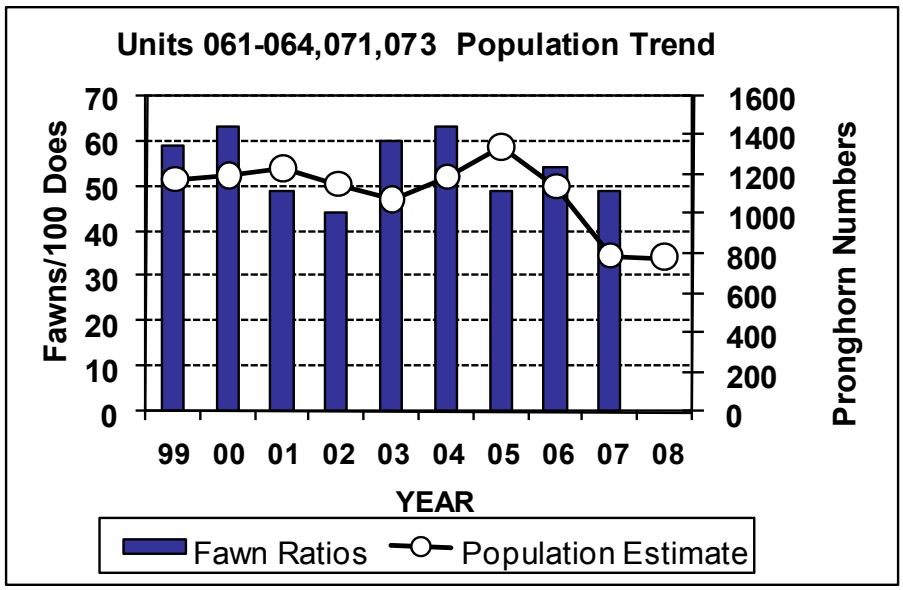


Figure 1. Population and fawn recruitment trends for pronghorn herd in Units 061 – 064, 071, 073.

Units 065, 142, 144, Southern Elko County, Northern Eureka County
Report by: Russell Woolstenhulme

Harvest Results

Twenty-five resident tags were available for the any legal weapon hunt in 2007 (Three additional for non-resident). Twenty resident tags for "horns shorter than ears" were available for the Eureka County portion of unit 144.

Survey Data

Post-season herd composition surveys were conducted from the ground in November 2007. A total sample of 169 antelope was obtained; yielding ratios of 56 bucks/100 does/39 fawns. In 2006 the sample of 169 antelope resulted in ratios of 48/100/54.

Habitat

Approximately 35,000 acres of habitat burned within this unit group during the summer of 2006. The Webb and Sneekee fires in particular affected range used by antelope during the summer and fall months. Several fires over the last 2 years have burned areas that were previously burned during fires in 1999. These burns are expected to provide good summer and fall habitat in the future. Most of the important antelope winter habitat in this unit group was unaffected by the burns. Winter habitat is a limiting factor within the unit, which may limit herd growth potential and may create depredation problems in Unit 144 as antelope continue to disperse further into Eureka County.

Population Status and Trend

Population estimates for this unit group were similar to last year. Fawn production was down and buck ratios remain high.

Unit 066, Owyhee Desert: Northwestern Elko County
Report by: Ken Gray

Survey Data

No survey was conducted in this unit in 2007.

Habitat

Approximately 4,000 acres of antelope summer range burned near the Petan Ranch in the summer of 2007. Another 20,000 acres of antelope habitat burned on the west side of the Snowstorm Range. It is possible that in 5 to 10 years, with good grazing practices, these areas will recover and provide good antelope habitat. Much of the sagebrush habitat within this unit has been afflicted by the aroga moth and is in extremely poor condition. The 9 antelope water developments constructed on the Owyhee Desert were used extensively by antelope during the summer of 2007 as all other water sources were dry.

Population Status and Trend

The Owyhee Desert segment of the population has remained stable but significant increases in the population have occurred on the west side of the Snowstorm Range and in the Petan Ranch area. Low fawn recruitment levels were used in the model since all surrounding areas showed poor fawn production.

Units 067, 068: Western Elko and Northern Lander and Eureka Counties
Report by: Ken Gray

Survey Data

A winter ground survey was conducted in January of 2008. A sample of 957 pronghorn was obtained: yielding ratios of 40 bucks/100 does/22 fawns (Table 1). The buck ratio was 3 bucks per 100 does below the 10-year-average. The fawn ratio was the second lowest ever recorded for this unit group.

Table 1. Observed buck ratios, fawn ratios and sample size for pronghorn in Units 067-068.

Parameter	2007	2006	1996-2005 Average
Bucks/100 does from surveys	40	48	43
Fawns/100 does from surveys	22	36	38
Sample size from surveys	957	1,027	582

Habitat

The winter of 2006-2007 produced below average precipitation levels while the summer of 2007 was one of the driest and hottest on record. These climate conditions resulted in very poor vegetation conditions throughout the unit group.

The large seedings that were implemented during the past 12 years are being used extensively by wintering antelope. Antelope are especially utilizing the forage kochia associated with these seeded areas. Antelope winter use on kochia has averaged 30% in some areas over the past 4 years. The Izzenhood seeding, implemented by the Elko BLM, along with the Bobs Flat seeding have been extremely important for wintering antelope.

A 1,400 acre seeding is planned to be implemented this spring in the northern end of Boulder Valley in order to improve winter range for antelope.

Population Status and Trend

A total of 196 antelope was captured and removed from this unit group this past winter. Antelope were trapped and transplanted to east-central Nevada from the west side of the Izzenhood Range (75), Bobs Flat (40) and the northern end of Boulder Valley (81). In addition, 7 doe antelope were fitted with GPS radio collars and 48 bucks were fitted with ear tags and released on site. These marked animals will help delineate antelope movement both within and outside of the unit group. These data will be useful in producing more accurate population estimates.

The 067-068 antelope herd is currently estimated at approximately 550 animals. This estimate is 35% lower than last year. This decrease is due to animals removed from the population through trapping and harvest compounded by low fawn recruitment.

One challenge with this herd is managing the harvest in relation to the relatively high percentage of antelope that are occupying private land during the hunt season. It is estimated that up to 30% of the antelope herds are on private fields that are not open to hunting.

The 067-068 antelope population is now close to carrying capacity since it is believed that antelope from Unit 051 and 066 may be utilizing portions of the 068 winter ranges.

Units 072, 074, 075: Northeastern Elko County
Report by: Kari Huebner

Survey Data

Surveys conducted in 2007 resulted in 258 antelope being classified; yielding ratios of 21 bucks/100 does/32 does. Buck and fawn ratios were slightly down for the second consecutive year. This survey is typically conducted between the archery and rifle season in this unit group due to the migration of antelope out of the Unit 072 into Idaho during and after the rifle season.

Habitat

This unit group was affected greatly by wildfire in 2007. A large amount of area burned the northern end of Units 072 and 074 (The Murphy and Scott Creek Fires), and a smaller area in Unit 075 (The Hepworth Fire). The long-term effects of these fires may be beneficial as grasses dominate the recovering burned areas, however the negative short-term effect will be less available browse on winter ranges.

Population Status and Trend

Overall, this pronghorn herd appears to be stable. The combination of the lack of good summer precipitation and more extreme winter conditions in the lower elevations contributed to lower fawn survival than expected for this herd. This herd does not seem to be following the trends of neighboring herds (such as Area 6) in success and survival. Hopefully with the extensive seeding efforts in Nevada and Idaho on the burned areas the herd's carrying capacity will increase and expand in future years.

Units 076, 077, 079, 081, 091: Northeastern Elko County
Report by: Kari Huebner

Survey Data

Post-season surveys in September and October 2007 resulted in the classification of 188 antelope; yielding ratios of 37 bucks/100 does/28 fawns. The buck ratio increased from 32 last year and the fawn ratio decreased significantly from 41 last year.

Habitat

Major fires impacted this herd this past summer. The West Basin and Eccles Fires affected a good portion of Unit 076, and the West Fork Fire burned the majority of Unit 081. The long-term effects of these fires may be beneficial as grasses dominate the recovering burned areas, however the negative short-term effect will be less available browse on winter ranges.

Population Status and Trend

Overall, this pronghorn herd appears to be stable. A large portion of Unit 076 burned during the summers of 2000 and 2001. The area had been seeded heavily and was coming back well. As a result, this herd has been utilizing the northern portion of Unit 076 more than in previous years. Hopefully extensive seeding efforts on this year's burned areas will allow this herd to increase once again as habitat recovers.

Units 078, 105 – 107, 121: Southeastern Elko and Central White Pine Counties
Report by: Tony Wasley

Tag Quotas and Harvest Results

Forty-nine tags were available for the rifle pronghorn buck hunt in 2007. Fifty-three tags were available for the rifle pronghorn buck hunt in 2006. The 10-year average for tags in this unit was 55. Tag quotas have varied very little in this unit group.

Survey Data

These units were surveyed from the ground in mid-December. A total of 487 animals was observed; yielding ratios of 37 bucks/100 does/35 fawns.

Habitat

The summer of 2007 was hot and exceptionally dry. In areas where reliable water sources were present, large numbers of antelope could be observed. Steptoe Valley contains the bulk of the animals for this unit group. Antelope remained in areas as long as water was available. Many of the drier areas throughout this unit group have become uninhabitable for antelope during summer months because of low water availability. Antelope have been especially challenged in areas where they face stiff competition from wild horses for the little water that is available.

Population Status and Trend

The current population estimate for the 078, 105 – 107, & 121 Unit Group was up 6 percent from last year and showed an increase for the fifth consecutive year. Given the exceptionally dry conditions observed in 2007, it was especially surprising and indicated this population may be able to grow substantially in years with more favorable climatic conditions. The population was up significantly from past years and demonstrated a positive long-term population trend. This trend was bolstered by high fawn ratios in 2004 and even higher fawn ratios in 2005. Despite the exceptionally dry conditions that existed throughout the summer of 2007, the fawn ratio in this unit group remained above the long-term average.

Units 101 – 104, 108: South Central Elko and Western White Pine Counties
Report by: Tony Wasley

Tag Quotas and Harvest Results

Seventy-five tags were issued for the rifle pronghorn buck hunt in 2007. Seventy three tags were issued for the rifle pronghorn buck hunt in 2006. The 10-year average quota for this unit group was 43 tags.

Survey Data

These units were surveyed from the ground in late October and Early November. A total of 671 animals was observed; yielding ratios of 39 bucks/100 does/19 fawns.

Weather and Habitat

The summer of 2007 was hot and exceptionally dry. In areas where reliable water sources were present, large numbers of antelope could be observed. Ruby Valley, Long Valley, and Butte Valley contain the bulk of the animals for this unit group. Antelope remained in areas as long as water was available. Many of the drier areas throughout this unit group have become uninhabitable for antelope during summer months because of low water availability. Antelope have been especially challenged in areas where they faced stiff competition from wild horses for the little water that was available.

Population Status and Trend

The current population estimate for the 101 – 104, & 108 Unit Group was down 13 percent from last year. However, despite this year's decline, the long-term trend was upward due to pronghorn releases (+86 in 2003) and good to fair levels of fawn recruitment in recent years. The dry range conditions in 2007 likely resulted in the low fawn recruitment observed. The fawn recruitment in 2007 was the third lowest observed in the last 25 years. Despite the decline in this year's population estimate, this unit group has been stable or displayed a growth trend for 7 of the last 10 years.

Units 111-114: Eastern White Pine County
Report by: Curt Baughman

Survey Data

Post-season surveys were conducted in December 2007 and January 2008. A sample of 1,180 pronghorn was classified as 309 bucks, 753 does and 118 fawns; yielding ratios of 41 bucks/100 does/16 fawns. A post-season survey was not accomplished in 2006. Fawn recruitment was estimated for 2007 based on values observed in geographically related herds that were surveyed. The 2005 post-season survey documented ratios of 37/100/52. Herd composition averaged 33/100/32 for the previous 10 years (1995-2004). The 52 fawns/100 does documented during the 2005 survey was the highest recorded since 1977, while the 16 fawns/100 does observed during the 2007 survey was the lowest on record.

Habitat

Habitat conditions deteriorated rapidly in 2007. During the last 5 months of 2006, precipitation measured at Ely by the National Weather Service totaled 56% of average. This was followed by 65% of normal precipitation during 2007. Only 47% of average moisture was recorded during the April through June period. Average temperatures were much warmer than normal during the months of March through August. This resulted in modest plant growth and early desiccation of grasses and forbs. Reduced cover and nutritional values were unfavorable for the survival of pronghorn kids. Use of pronghorn habitat by domestic livestock and feral horses further compromised habitat values. The 2007-08 winter was colder than average. Several storms brought high winds, cold temperatures and dry snow. Hard, drifted snow accumulated in many valley areas and persisted due to the prolonged cold. In many areas, pronghorn distribution became limited to mountain foothills where south facing slopes held less snow. From October 1, 2007 through late March 2008, the precipitation total for Ely stands at 57%. Local mountain Snotel sites have recorded between 75% and 80% over the same period. Spring habitat conditions for pronghorn will be below average unless spring precipitation totals are above average.

Population Status and Trend

Population estimates for this unit-group have been stable to increasing since 1998 Recruitment has been above average during 7 of the last 10 years. Buck harvest has also been high with 6 of the 7 highest years occurring over the same period. The recent drought has stopped these positive trends for the short term. In addition, the estimated recruitment rate used for 2007 may have been slightly overestimated. When combined with low 2008 recruitment, population modeling results in a 2008 population estimate that is 18% lower than 2007. Pronghorn are in less-than-optimum condition coming into the spring season. Climatic conditions throughout the spring and summer will dictate population trend in 2008. Although the pre-season buck/doe ratio will be high, low 2008 recruitment will result in lower quota recommendations for the 2008 season.

Units 115, 231, 242, Eastern Lincoln and Southern White Pine Counties
Report by: Mike Scott

Survey Data

Ground surveys were conducted for pronghorn in these units during September and October 2006. A total of 405 pronghorn was classified, consisting of 99 bucks, 205 does, and 101 fawns. These numbers result in a ratio of 48 bucks/100 does/49 fawns. Animals were found distributed throughout Lake, South Spring, Snake, and Hamlin Valleys.

Habitat and Population Status and Trend

BLM conducted a horse gather in February of 2006. Approximately 750 horses were gathered from Area 23. This gather should allow limited recovery of forage resources throughout the area, although wild horse numbers remain above the appropriate management level in the area. Pinyon and juniper invasion continues to limit pronghorn habitat throughout this area. Landscape scale projects would be required in order to increase available habitat for antelope. BLM and NDOW are planning to install 7 new water developments and rebuild another 3 in Area 23 for antelope. The installation of new water developments should allow antelope to utilize areas not currently being used while reducing competition with domestic livestock for forage and water. Additionally, BLM is planning to perform large-scale projects in Area 23 for the benefit of Sage Grouse. Some of these projects will likely entail treatment of senesced or degraded sagebrush. If any of these projects are indeed completed, pronghorn will likely benefit from increased forage. The pre-hunt population estimate for 2007 is 500 animals, compared to 450 in 2006.

Units 131, 145, 163, 164: Southern Eureka, Northeastern Nye, and Southwestern White Pine Counties
Report by: Mike Podborny

Survey Data

Post-season herd composition surveys were conducted from the ground in September and October 2007. This was a partial survey with 127 antelope classified; yielding ratios of 31 fawns/100 does/19 bucks. In comparison, a sample of 350 antelope was surveyed in 2006; yielding ratios of 38/100/40. The 10-year-average (1997-2006) fawn ratio was 31 and has ranged from 5 to 40.

Habitat

The Southwest Intertie Project (SWIP) is a large 500 kV power line proposed from Idaho to Las Vegas and will cross through Jakes Valley in Unit 131. This power line will be constructed in the next few years. The potential impacts to antelope are not anticipated to be severe but disturbance of habitat will occur.

Population Status and Trend

Fawn production was below-average and the computer modeled population estimate indicates a population trend that is downward by 9%. This antelope herd has increased significantly in the past 20 years due to

ingress of antelope from other areas, transplants, increasing habitat due to water developments and favorable weather conditions some years. Increased use of alfalfa fields by antelope over the years is a result of the larger population size and associated increased distribution of antelope. Fencing of some fields and the installation of guzzlers to provide additional water away from fields has lessened the impacts of antelope on private land. As these antelope populations continue to increase in this area, the challenge will be to employ management that minimizes conflicts with private land.

Units 132 - 134, 245: Eastern Nye and Western Lincoln Counties
Report by: Mike Podborny

Survey Data

There were 59 antelope classified during limited ground surveys in Railroad Valley and a portion of White River Valley; yielding ratios of 31 bucks/100 does/10 fawns. Although statistically, these data were weak, they suggest poor fawn production and recruitment with a healthy buck ratio. The major portion of White River Valley, Garden Valley, Coal Valley and Sand Spring Valley were not surveyed in 2007. There has been no significant post-season herd composition survey conducted in this unit group since 2002 when 238 pronghorn was classified; yielding ratios of 28/100/6.

Habitat

Four water developments in Garden and Coal valleys that were over 20 years old and in disrepair were completely rebuilt by the NDOW Guzzler Crew in 2007. These water developments should provide more reliable water for antelope and other wildlife. The Caliente Nuclear Train Route proposed by the Department of Energy (DOE) from Utah to Yucca Mountain will bisect Units 132 and 133. Negative effects on the pronghorn population can be expected depending on fencing and other structures that might be associated with the project. The Southwest Intertie Project (SWIP) is a large 500 Kv power line proposed from Idaho to Las Vegas and will bisect several valleys in this unit group. The potential impacts to antelope are not anticipated to be severe but disturbance of habitat will occur.

Population Status and Trend

Survey data has been insufficient to accurately determine status and trend of this antelope herd for the last 5 years. All indications are that the severe drought resulted in poor fawn production in 2007. The antelope herd increased significantly in January 2008 when 184 antelope were captured in Unit 068 north of Interstate 80 and released on the same evening in Coal and Garden valleys of Unit 133. Antelope sometimes disperse widely after being transplanted and so it will take a couple of years to determine the success or failure of this release.

Units 141, 143, 151- 155, Eastern Lander and Eureka Counties
Reported by: Larry T. Gilbertson

Survey Data

Post-season antelope surveys were conducted from the ground in 2007. A total of 348 antelope were classified as 77 bucks, 201 does and 70 fawns; yielding ratios of 38 bucks/100 does/35 fawns. The previous year's sample (2006) was 377 antelope classified; yielding ratios of 42/100/35.

Habitat

Pronghorn populations in these hunt units continue to expand into recovering wildfires that are providing additional habitat. In many cases, the rehabilitation on the burned areas has resulted in better habitat conditions than was present before the burn. In addition, rehabilitated areas with improved livestock grazing management facilitate improved plant survival. Areas seeded with forage kochia are especially attractive to antelope. In the case of the smaller burns, the creation of more open terrain in brush communities has increased antelope distribution.

Antelope populations have also responded favorably to better water distribution such as in Crescent Valley where Cortez Gold has pumped water out of gold mining pits and re-injected it into the valley at other sites. Antelope quickly found these water sources and are taking advantage of additional available habitat.

Population Status and Trend

The overall fawn ratio of 35 fawns/100 does is sufficient to maintain current population levels. Higher fawn ratios in Units 151 and 152 will likely allow for population increases in these units. The buck segment of the population remains healthy as evidenced by surveys and a resident hunter success rate of 83% during the 2007 season.

Units 161, 162, Northern Nye, Southeastern Lander, and Southwestern Eureka Counties
Report by: Tom Donham

Survey Data

A shortened post-season survey was conducted in Big Smoky Valley in mid-October, 2007. A total of 48 pronghorn was classified including 10 bucks, 32 does, and 6 fawns. Survey data indicate pronghorn production rates suffered due to the severe drought conditions that were experienced throughout much of central Nevada in 2007. The 161-162 pronghorn herd has experienced below average production in 5 of the past 6 years.

Habitat

Habitat conditions in central Nevada suffered greatly due to drought conditions beginning in late 2006 and lasting throughout 2007. Some relief was provided to portions of central Nevada when the Bureau of Land Management removed 205 feral horses during January and February 2007. The horses were removed from the Stone Cabin HMA, a portion of which lies within Unit 162. The removal of these feral horses should help improve forage conditions as well as provide some relief to critical water sources that have been severely impacted by feral horse use and drought.

The completion of 3 water developments in the southern portion of Unit 162 should benefit pronghorn that have been impacted by the downward trend of natural spring sources caused by feral horses and drought. The water development projects were begun in 2005 by the USFS, and to date, only one development has been completed. Unfortunately, the USFS has not fenced the water development that was built and feral horses are currently utilizing it, which is increasing horse use in the area where the development was supposed to have provided relief to resident pronghorn.

Population Status and Trend

Pronghorn populations in central Nevada steadily increased during the mid 1980's due to favorable climatic conditions. This population growth was slowed and, in some instances reversed, by drought conditions experienced during most years from the late 1980's to mid 1990's. While pronghorn populations remained relatively stable from the late 1990's through the early 2000's, severe drought conditions experienced during 2002 and 2003 once again took a toll on these herds. Drought conditions can result in poor body condition of adult animals due to reduced nutrition, resulting in underweight fawns, as well as reducing fawn hiding cover during the time when they are most susceptible to predation. 2004 and 2005 saw some improvement in production rates due to slightly more favorable climatic conditions, and the 161-162 pronghorn herds received a short reprieve. Unfortunately, drought conditions returned to central Nevada in late 2006 and continued throughout 2007. The Unit 161-162 pronghorn herd suffered very low production in 2007 due to these conditions and the population continues to experience a downward trend.

Although pronghorn continue to struggle due to poor habitat conditions throughout most of Units 161 and 162, an increase in numbers over the past several years has occurred around agricultural areas in Big Smoky Valley, Unit 161. This increase can be attributed to transplants of pronghorn in neighboring units, as

well as the availability of higher quality forage and more reliable access to water in these areas during critical periods. The current population estimate for the 161-162 pronghorn herd is approximately 210 adult animals.

Units 171 - 173, Northwestern Nye and Southern Lander Counties
Report by: Tom Donham

Survey Data

A post-season composition survey was conducted in Units 171-173 in early October, 2007. The survey included Big Smoky Valley, Ione Valley, Lodi Valley, and Smith Creek Valley. A total sample of 86 pronghorn was classified as 28 bucks, 53 does, and 5 fawns. Survey data indicate that like most central Nevada pronghorn herds, the Management Area 17 population suffered very low production in 2007 due to drought conditions.

Habitat

Three water developments have been installed in Unit 172 over the past several years and pronghorn have benefited from the reduction of competition with feral horses and livestock at natural waters. These waters have also allowed pronghorn to utilize habitats and associated forage that are unavailable to feral horses and livestock for a large part of the year due to a lack of natural water. The water developments have become even more important to the population during the recent series of drought periods.

Population Status and Trend

Between 1988 and 2003, a total of 173 pronghorn were released into Ione Valley, Unit 172. Following these releases, many animals dispersed into adjoining areas, which slowed the growth of the Management Area 17 pronghorn herd, but at the same time, benefited surrounding areas.

While the largest portion of the Management Area 17 pronghorn herd currently inhabits the southern portions of Units 172 and 173, increases in pronghorn numbers occurring in agricultural areas in Unit 184 have begun to stimulate population growth in the northern reaches of 172.

The Management Area 17 pronghorn herd has experienced somewhat better production than other central Nevada herds during recent drought periods, which has allowed this herd to show moderate growth while others did not. Unfortunately, in 2007, that was not the case, and production was severely impacted by drought ravaged habitat conditions.

Currently, the Unit 171-173 pronghorn population appears to be stable to slightly decreasing with a population estimate of approximately 150 adult animals.

Units 181-184: Churchill, Southern Pershing, Western Lander and Northern Mineral Counties
Report by: Jason Salisbury

Survey Data

A total of 147 pronghorn were observed during the 2007 post-season survey. The sample included 38 bucks, 82 does, and 27 fawns. The resulting ratios were 46 bucks/100 does/35 fawns. Areas surveyed included Smith Creek Valley, Edwards Creek, Bell Flat, and Dixie Valley.

Habitat

In 2007, the Broken Hills water development was constructed with a 6,000 gallon water capacity. The Grayback water development had maintenance completed on it and included the addition of a new apron, pipe rail fence, gutter, and drinker. This water development will connect and extend antelope summer range from the Grayback Hills through the Broken Hills, and on into Lodi Valley. A series of storms that occurred during the months of December, January and February provided much needed precipitation throughout

Management Area 18. New leader growth on budsage, spiny hopsage and an increase in grass and forb production, have been observed in the lowlands and should provide needed nutrition for this herd.

Population Status and Trend

In January of 2007, 52 antelope from Elko County were released into the southeastern side of Dixie Valley located in Unit 183. An additional 68 antelope were released on Bell Flat located in Unit 181. These augmentations will strengthen this small herd, and provide for continued growth of the Management Area 18 pronghorn herd. Increased observations from the 2007 Win Wan Valley release in Unit 205 indicate that some of that release complement has taken up residence in Area 18. Composition surveys conducted during 2007 noted record low fawn ratios for this herd. Extremely dry conditions experienced during 2007 may have negatively influenced production and recruitment rates. Current population estimates for this herd indicate a static trend.

Units 202, 204: Lyon and Mineral Counties
Report by: Jason Salisbury

Survey Data

A ground survey was conducted in February 2008. A sample of 123 pronghorn was classified with sex and age ratios of 29 buck/100 does/25 fawns. The fawn ratio obtained from this survey was well below the past 5-year average of 46 fawns/100 does.

Habitat

In 2007 the United States Forest Service conducted several feral horse gathers in the Bodie Hills and Aurora Peak areas. A total of 200 feral horses were removed from upper elevation antelope summer range along the Nevada-California Stateline. These horse removals along with improved moisture receipts from this past winter should dramatically improve forage conditions and water availability at spring sources for this antelope herd.

Population Status and Trend

The population estimate for the Bodie and Wassuk antelope herd is 170 animals and is a 6% decrease from what was reported last year. This year's decreased fawn recruitment is most likely attributed to the drought conditions we experienced in 2007. Although the production observed in 2007 is well below average the herd should remain stable over the short time. The hunting success rate for this unit has been low for many years due to the delayed migration of antelope into Nevada. Weather events usually aid in the movement of animals from California into Nevada. Hunter success has increased every year since the inception of the new October hunt which is later than previous hunts. The 2006 season showed an 83% hunter success rate and the 2007 season posted a 58% success rate. The 5-year average prior to the later October hunt was a 24% hunter success rate. California does not provide an antelope hunt for this herd.

Units 203, 291: Lyon, Douglas Counties
Report by: Jason Salisbury

Survey Data

Post-season ground surveys resulted in the classification of 39 animals with a sex and age ratio of 43 bucks/100 does/43 fawns. Areas surveyed include the Buckskin, Singatse and Pinenut Mountain Range's The recruitment rate of 43 fawns/100 does for even a small sample size is encouraging because it's the first time in the history of the herd that the fawn ratio was observed to be in the forties. This observed fawn ratio is above maintenance level and should afford an opportunity for limited growth in this herd.

Habitat

The Adrian Valley Fire occurred in the Pine Nut Mountain Range in the summer of 2007 resulting in approximately 18,000 acres burned. Much of the area burned by this fire was dominated by pinyon pine woodlands. This fire may provide future benefits to pronghorn and other wildlife by opening up these woodlands to the establishment of shrubs, grasses and forbs. Following the fire approximately 750 acres were seeded with a grass and forb mixture.

Population Status and Trend

Pronghorn numbers in this unit group are estimated at 60 animals which is a 17% increase from during 2007. This herd has shown low recruitment rates since its inception but 2007 survey information indicates that opportunity for growth does exist within this population.

This area continues to have a significant amount of pinyon pine cover which antelope utilize as thermal cover during the hot summer months. This makes Unit 291 difficult to survey from the ground. It will require more intense surveys in the near future to more accurately determine the overall status and trend of this herd.

Units 205, 206: Eastern Mineral County
Report by: Jason Salisbury

Survey Data

No surveys were conducted in this unit group in 2007. In 2006, 95 antelope were surveyed from the ground. This sample produced a composition ratio of 54 bucks/100 does/52 fawns.

Habitat

Wind Anemometers have been placed in Soda Springs Valley. If wind energy is pursued it will have detrimental effects to future water development plans as well as the overall health of the antelope herd. The establishment of wilderness areas are being proposed for areas within Mineral County. These wilderness designations will restrict off road travel, wind energy and mining and may also hinder future habitat projects such as water developments and vegetation enhancement projects. Future water developments are crucial for addressing current and future habitat requirements of this herd and for expansion of pronghorn into unused portions of this unit group currently unoccupied because of a lack of available water. The Calvada Summit guzzler is an important water development used by antelope in Unit 205. In 2008 maintenance will be conducted to ensure all water developments in this area are functional and providing water for use by pronghorn.

Population Status and Trend

In January 2007, 72 antelope were released into Win Wan Valley. Observations of the 2007 release complement have been made to the north in Management Area 18. Three known mortalities were reported from automotive collisions with antelope from the release. Two were killed on Sand Springs Summit on Hwy 50, and one was killed on Alt 95 by Carson Lake. The Area 20 antelope herd is spread out over a large geographic area. Small herds of antelope occupy small home ranges in the summer months in and around limited water sources located in the area. The population estimate for the Management Area 20 antelope herd is 330 animals. Overall, this population appears to be stable

Units 221 – 223, 241: Lincoln and Southern White Pine Counties
Report by: Mike Scott

Survey Data

Ground surveys were conducted for pronghorn in these units during October and November 2007. A total of 322 pronghorn was classified consisting of 53 bucks, 229 does, and 40 fawns. These numbers resulted in a

ratio of 23 bucks /100 does/18 fawns. Animals were distributed throughout the major valleys in all units, with the bulk of the sample coming from Steptoe and Cave Valleys.

Habitat

Habitat conditions were rated as fair throughout the hunt unit due to recent rains. Dry conditions during the winter, spring, and early summer are likely responsible for the low observed fawn ratio. Degraded sagebrush communities and continued invasion by pinyon and juniper trees continues to limit pronghorn habitat. The Silver State Trail, new proposed power lines, and proposed water pipeline will likely have permanent long lasting detrimental effects to pronghorn habitat. BLM projects for the benefit of wildlife are proposed but have not yet been completed. Upon completion, these various projects, which include installation of water developments and treatment of degraded sagebrush, should be of benefit to the pronghorn population.

Population Status and Trend

The computer-generated population estimate for 2006 is 340 animals, compared to 325 in 2007.

Unit 251, Central Nye County
Report by: Tom Donham

Survey Data

A post-season composition survey was conducted in Unit 251 in mid-October, 2007. The survey included south Stone Cabin Valley, and south Ralston Valley. A total of 51 pronghorn was classified as 16 bucks, 31 does, and 4 fawns. As with many other central Nevada pronghorn herds, survey data indicate that drought severely impacted production in the Unit 251 population. Due to the existence of the Tonopah Test Range along the southern boundary of Unit 251, fluctuations in numbers and variations in buck/doe ratios can occur regularly due to movement of animals onto and off of the Test Range.

Habitat

Pronghorn habitat in Unit 251 has been severely impacted by drought and unreasonably high numbers of feral horses for quite some time. Some natural water sources that have been damaged by feral horses for years went dry during the summer of 2007 due to the recent drought. Forage conditions, which have suffered from high numbers of horses, were even more severely impacted during 2007 by the drought.

During January and February 2007, the Bureau of Land Management conducted several feral horse gathers in central Nevada. A total of 461 feral horses were removed from the Stone Cabin, Reveille, and Saulsbury HMA's, as well as the surrounding area. The majority of these feral horses were removed from Unit 251. The removal of these feral horses should allow habitat conditions to improve as well as provide some relief to critical water sources that have been severely impacted by feral horse abuse. Although the gathers are a step in the right direction, numbers are still above appropriate levels and impacts to pronghorn, other wildlife, and their habitats will likely continue.

Population Status and Trend

The Unit 251 pronghorn population experienced stable population levels for several years during the late 1990's, as did those throughout much of central Nevada. These herds experienced decreased production/recruitment during 2002 and 2003 due to extremely dry conditions, resulting in decreasing population trends. Despite improved climatic conditions in 2004 and 2005, the Unit 251 pronghorn herd suffered below average production during those years as well. While high numbers of feral horses have impacted the Unit 251 pronghorn herd as well as those that inhabit the Tonopah Test Range, there have been some increases in pronghorn numbers around agricultural areas. As habitat conditions have degraded, and natural waters have suffered, agricultural areas attract more and more pronghorn. Presently, due to the recent impacts of drought, the Unit 251 population is experiencing a decline. The pre-hunt population estimate for Unit 251 is approximately 160 adult animals.

ROCKY MOUNTAIN ELK

Units 061, 071, Bruneau River and Merritt Mountain Area: Northern Elko County
Report by: Ken Gray

Harvest Results

Sixty-one rifle bull elk tags, including incentive and nonresident tags were available for the 2007 season. Hunter success for the resident rifle bull hunt was only 53%. It was 54% last year and the past 5-year-average hunter success rate was 61%.

Survey Data

A total of 886 elk was classified from a helicopter during February of 2008; yielding ratios of 33 bulls/100 cows/35 calves (Table 1). The bull ratio was slightly above the past 10-year-average while the calf ratio was 8 calves below the past 10-year-average.

Table 1. Observed bull ratios, calf ratios and sample size for elk in Units 061-071.

Parameter	2007	2006	1997-2006 Average
Bulls/100 Cows from winter surveys	33	23	31
Calves/100 Cows from winter surveys	35	43	43
Sample size from winter surveys	886	697	402

Habitat

The Murphy fire burned approximately 550,000 acres which was one of the largest fires to ever burn in the western United States. This fire burned most of the Bruneau River drainage, parts of the Mahogany Range and over half of the Diamond A Desert. A sizable portion of the 061-071 elk winter range burned in this fire. The large amount of burned winter range coupled with significant snow depths at higher elevations pushed the majority of elk to the northern unburned parts of the Diamond A Desert. Fortunately, milder conditions persisted in the lower elevations which allowed elk to survive the winter in relatively good condition. The long-term outlook for the elk habitat in this unit group is positive. The burns should recover to grassland type habitat which will be beneficial for elk. This is especially true for the Bruneau River drainage since it was in outstanding ecological condition before it burned. In addition to natural recovery, NDOW seeded approximately 30,000 acres with a seed mix that consisted of a mixture of shrubs, forbs and grasses including a significant amount of bluebunch wheatgrass.

Population Status and Trend

At this time it is unknown what impact the huge Murphy Fire has had on elk distribution. There is evidence that close to 100 elk may have moved from Unit 061 into Unit 062. It is also possible that some elk from Unit 072, that winter in Idaho on the east side of the Jarbidge River, could have been forced to winter on the west side of the Jarbidge River where most of the elk from Unit 061-071 winter. Future surveys will determine if some of these changes in distribution are long-term or if elk will move back to their original habitat once the burns are recovered.

This elk herd continues to increase and is now estimated at approximately 920 animals. The low hunter success is a concern since it may be a further indication that some elk are leaving the hunt units prior to hunting season. The recommended tag quota should be higher than last year's quota due to the higher population estimate and a higher bull ratio.

Units 062, 064, 066 - 068, Independence and Tuscarora Ranges: Western Elko and Northern Eureka and Lander Counties
Report by: Ken Gray

Survey Data

A total of 355 elk was classified from the ground and air during February 2008; yielding ratios of 45 bulls/100 cows/36 calves. The calf ratio was 8 points lower than last year and 12 points lower than the previous 5-year-average. Table 1 depicts the survey data obtained for the past 5 years.

Table 1. Observed bull ratios, calf ratios and sample size for elk in Units 062-068.

Parameter	2007	2006	2002-2006 Average
Bulls/100 cows from winter surveys	45	40	40
Calves/100 cows from winter surveys	36	44	48
Sample size from winter surveys	355	211	134

Habitat

Approximately 30,000 acres of elk habitat burned during the summer of 2007. The west side of the South Independence Range burned and was used extensively as intermediate range by elk. Range fires have burned over 550,000 acres of rangeland within this unit group during the summers of 2006 and 2007. These fires should promote grass at the expense of shrubs, which could benefit elk. Three miles of elk-proof fence was constructed around the Van Norman alfalfa field.

Population Status and Trend

A significant amount of elk habitat burned in Unit Group 061-071 as part of the 550,000 acre Murphy Fire. Following the fire, it appears there was an influx in elk numbers associated with the Bull Run Range which is in close proximity to Unit 061. At this point, based on hunter observations and survey data, up to 100 elk may have moved into Unit 062 as a result of the fire.

The elk population continues to grow in this area with the population being estimated at approximately 420 elk. If future surveys indicate the estimated 100 elk move back to Unit Group 061-071 then the population will be adjusted downward. The recommended tag quota for 2008 is expected to be higher than the 2007 quota based on a higher population estimate.

Units 072, 074 Jarbidge Mountains: Northern Elko County
Report by: Kari Huebner

Harvest Results

Unit 074 has been included in this unit group since the 2005 bull hunting season. Fourteen of the 45 bulls harvested from this unit group were taken in Unit 074 during the 2007 season. The elk herd continues to expand its range and numbers in Unit 074. An antlerless hunt for both units may be considered as elk populations approach objectives in the future.

Survey Data

Post-season surveys conducted in February resulted in the classification of 593 elk; yielding ratios of 40 bulls/100 cows/42 calves. The post-season calf ratio indicates that the herd experienced only slightly lower recruitment than the 5-year average production of 44 calves/100 cows.

Habitat

This herd was impacted by a severe fire season in 2007. The Murphy Fire (578,401 acres) burned mostly north and west of the Unit 072 boundary, however it had significant impacts in Idaho where this herd often winters. The Scott Creek Fire (55,658 acres) mostly impacted the northern portion of Unit 074.

In order to meet monitoring commitments in The *Jarbidge Mountains Elk Herd Management Plan*, NDOW will be working with the US Forest Service and the Bureau of Land Management to monitor elk use on vegetation at current population levels.

Population Status and Trend

Wildfires during the 2007 summer may have had an adverse impact on calf survival due to winter range that burned. It is expected that grasses will come back following these fires, especially at the higher elevations, and should prove to be beneficial to elk over the long term.

The *Jarbidge Mountains Elk Herd Management Plan* identifies an elk herd population objective of 1,000 elk. In order to slow down the growth of this elk herd as it approaches the population objective and provide recreation, antlerless hunts have been scheduled in Unit 072 for the 2008 hunting season. Due to the low success of antlerless elk hunters in this area, antlerless tags will likely remain consistent to keep up with population growth.

Unit 075, Snake Mountains: Elko County
Report by: Kari Huebner

Harvest Results

The number of antlerless elk tags remained high in this hunt unit for the 2007 hunting season. In order to stay within the population objective of 100 elk outlined in the 075 elk sub-plan, adequate harvest of both sexes must be maintained. Since the first elk hunt in this unit during the fall of 1999, quotas have been significantly increased in response to elk population growth, low hunter success, and NDOW's responsibility to maintain the elk population objective. Both split and longer seasons have allowed antlerless elk hunters to be more effective the last couple of years and in turn, have been effective at reducing the overall population size. The future harvest strategy will be to maintain current population levels.

Survey Data

Post-season surveys resulted in the classification of 77 elk; yielding ratios of 56 bulls/100 cows/41 calves. The sample size was less than the previous year. The bull and calf ratios both increased this year.

Habitat

A 16,720 acre wildfire burned in the Deer Creek portion of this unit in the summer of 2006. Although the initial impacts to wildlife were negative, the elk herd is again utilizing this area due to the release of the perennial grasses and forbs as the burn recovers. It will be several years until the brush component and aspens begin to recover.

Population Status and Trend

This year's observed recruitment rate of 41 calves/100 cows is above last year's ratio of 26. Both antlerless and antlered quotas will remain aggressive to keep this herd at population objective levels.

Units 076, 077, 079, 081 Thousand Springs, Goose Creek, and Pequop Mountains Area: Northern Elko County
Report by: Kari Huebner

Harvest Results

In 2007, bull tags remained constant in this area, and antlerless tags were increased. This was in response to a good bull harvest the previous year and the herd reaching the population objective. Bull hunter success was down by any legal weapon hunters, but up for muzzleloader and archery hunters. This was the first year of a split antlered elk season in this unit group. Although hunter success was lower with the spilt any legal weapon seasons, the overall percentage of 6-points or better for both early and late seasons was consistent with last year's single season. Antlerless hunter success was slightly lower than expected, but higher than last year and still effective at reducing the overall population of this growing herd.

Survey Data

Post-season surveys resulted in the classification of 621 elk; yielding ratios of 21 bulls/100 cows/38 calves. The observed bull ratio was below the 5-year average of 35 bulls/100 cows, and the calf ratio was also lower than the 5-year average of 47 calves/100 cows. Some of the drop in bull ratio may be a result of a shorter, less intense survey and survey timing with some antler loss already occurring, however lower calf recruitment is likely the result of increased snow accumulations on winter range.

Habitat

Although elk in this unit group have responded well to the large wildfires that burned a majority of this unit group in 1999 and 2000, they were negatively affected by the large scale fires that occurred in the area during the summer of 2007. Over 240,000 acres of habitat burned in this unit group this past summer. Extensive seeding efforts were expended this last winter to rehabilitate these fire ravaged areas. If the habitat responds as it did after the fires in 1999 and 2000 the long-term outlook is good for elk.

The majority of the water developments proposed for the area has been built and are being used by elk. This increased water availability is helping distribute the elk throughout the area. It will be important in the future to replace existing cable fences with pipe-rail fences on the water developments in an attempt to more effectively exclude livestock.

A private consultant conducted a habitat monitoring study for the BLM to assess elk use of vegetation at current elk densities since the population objective has been reached. The results of that study indicated that elk are not competing with livestock for forage at the current population level. The study also discovered that use was fairly high in isolated aspen and bitterbrush stands. This may be a combination of cattle, elk, and deer use. A fecal analysis study was conducted this past year to determine which species may be having the most impact. Those results should be available soon.

Population Status and Trend

With the second lowest calf recruitment ever observed in this unit group and effective antlerless harvest, the 076, 077, 079, 081 elk herd experienced a slight reduction in population this year. Less than normal precipitation in both the spring and summer followed by higher snow accumulations this winter contributed to the low calf survival.

A good majority of this unit group is comprised of checkerboard lands, meaning every other section is either public or private. The elk are spending a good deal of time on private lands in this area. Due to the extensive fires this year in the northeastern portion of this unit, elk spent more time on intact private hay meadows; therefore increasing the number of elk incentive tags for landowners. There are currently 11 landowners that participate in the elk incentive tag program who qualified for 29 elk incentive tags in this unit group.

It should also be noted that the boundary of Unit 079 was changed last year to separate the North Toano Range (079) from Pilot Mountain (now 091). Hunters that draw this hunt unit group will now be able to hunt Unit 079, along with the 076, 077, and 081 hunt units.

Units 078, 104, & 105, Spruce Mountain: Elko County
Report by: Tony Wasley

Harvest Results

Four any legal weapon tags were available in the seventh year of this hunt, and 4 hunters were successful. For specific 2007 hunting results, please refer to Harvest Tables in the Appendix Section.

Survey Data

No elk specific surveys were conducted for this unit. However, incidental to helicopter deer surveys a total of 119 elk was observed; yielding ratios of 29 bulls/100 cows/16 calves. Consistent with historic trends for this unit group, the bull ratio remains relatively stable and the calf ratio is exceptionally weak. This was one of the lowest calf ratios observed in this unit group for several years and followed one of the highest (46) in 2006.

Weather and Habitat

Winters have been mild in this area and the adult elk in this unit appear virtually unaffected by the winters. Survey data collected in 2007 suggest calf production and recruitment may have been limited by the high number of yearling cows in the population resulting from high recruitment in 2006 and exceptionally hot and dry summer conditions in 2007. The 2007/2008 winter received above average moisture and should promote forage production and quality in 2008. Increased precipitation, seedings, chainings, and water availability via guzzlers, could all be helping the Spruce Mountain elk herd overcome the low recruitment this population frequently exhibits.

Population Status and Trend

In the winter of 1997, 146 elk were released in Unit 105 on Spruce Mountain. It has been over 10 years since the releases and the elk have established themselves throughout Unit 105. Although production remains slow, several mature bulls have been observed and harvested. The herd appears to be expanding its distribution to the north into Unit 078. Low levels of calf recruitment previously observed in this unit continued into 2008 and resulted in a 7 percent decrease in the population estimate for 2008. However, harvest management was designed to promote herd growth towards a population objective of 340 elk. Additionally, several habitat projects in the area, including chainings, seedings, and water developments, should facilitate attainment of management objectives for this elk population.

Unit 091 Pilot Range, Eastern Elko County
Report by: Kari Huebner

Harvest Results

For the 2007 hunting season, Utah hunters harvested 4 bulls and Nevada hunters harvested 4 bulls. The elk quota is allocated equally each year between Nevada and Utah. Bull quotas for 2008 will remain the same. Antlerless harvest has been discontinued for this elk herd at the present time.

Survey Data

No survey was conducted in this unit for the 2007-08 herd year.

Population Status and Trend

The population model for Unit 091 in 2007 predicts a pre-hunt adult elk population of approximately 165 elk. It should also be noted that the boundary of Unit 079 was changed last year to separate the North Toano Range (079) from Pilot Mountain (now 091). Hunters that draw this tag will now only be able to hunt Pilot Mountain (both in Utah and Nevada) with the new western boundary being the Pilot Valley Road.

Unit 101 – 103, East Humboldt and Ruby Mountains: Elko County
Report by: Tony Wasley

Tag Quotas and Harvest Results

After several years of gradual reductions in the cow tag quota for this unit group, 2006 and 2007 saw moderate increases in tags from 30 tags in 2004 & 2005 to 45 and 60 in 2006 and 2007 respectively. The bull tag quota also increased from 15 in 2004 & 2005 to 20 in 2006 and 30 in 2007. Both cow and bull tag quota increases were warranted by the increase in hunter success and increase in elk observed in these units. Despite 60 cow tags and 30 bull tags in 2007, only 10 cows and 10 bulls were harvested. For more specific 2007 hunting season results, please refer to Harvest Tables in the Appendix Section.

Survey Data

Specific elk surveys were not conducted in this unit group, but intensive helicopter surveys were conducted for deer, bighorn sheep, mountain goats, and pronghorn. Elk observations were documented during these surveys, when hunters and others report sightings, or when landowner complaints were received and investigated. Eighteen elk were observed from the helicopter in these units incidental to other wildlife surveys conducted in the area during 2007. Only 5 different landowners have complained of elk use or damage over the past 9 years.

Population Status and Trend

This was a depredation hunt with the objective of eliminating elk or keeping elk numbers at a level where depredation on agriculture does not occur and a viable elk herd does not become established. This hunt has been very effective to that end. At this time, it is believed that there are very few if any yearlong resident elk in these units. Observations of individual elk have been reported and small groups of elk have been found within the unit, crossing the unit boundary, or near the periphery of these hunt units. However, despite these periodic observations, the population remains at extremely low levels throughout most of the hunt units.

Units 111 - 115, 221, 222, Schell, Egan, and Snake Ranges: Eastern White Pine, and Northern Lincoln Counties
Report by: Curt Baughman

Seasons, Tag Quotas and Harvest Results

A record total quota of 1,630 tags was approved in 2007 following 1,105 tags in 2006 and 1,272 tags in 2005. Management objectives for the 2007 harvest were stable quotas for bulls and a lower overall population. Bull quotas were very similar to 2006 while antlerless quotas were generally increased. Elk hunters reported a record harvest of 692 elk in 2007 including 302 bulls and 390 antlerless elk. The 2007 bull elk harvest was slightly below that of the previous 2 years. The record 2007 antlerless elk harvest was slightly above that of 2003. The overall 2007 bull elk hunter success rate of 48% was below the previous record low of 52% in 2006

The 2007 harvest contained 61% 6-point or better bulls following the record 72% 6-point or better bulls in the 2006 harvest. The long term (1981-2006) average has been 50% 6-point or better bulls in the harvest. In larger herds, point class data correlates roughly with the average age of harvested bulls. These changes in hunter success rates and point class data may have been influenced by several factors including substantial additions of new wilderness areas that affected access, warm weather during most of the any-legal-weapon

bull seasons, fewer bulls available in older age classes and the influence of poor habitat conditions on antler growth.

Survey Data

The 2007-08 winter survey was flown in combination with a spring deer survey March 17-23, 2008. Flight time was nearly half of that expended in 2007, however the general distribution of elk at lower elevations made for an efficient survey. A sample of 1,817 elk was classified, composed of 373 bulls, 1121 cows and 323 calves; yielding ratios of 33 bulls/100 cows/29 calves. During the previous survey, 2,611 elk were classified as 457 bulls, 1457 cows and 697 calves; yielding ratios of 31/100/48. The observed calf/100 cow ratio of 29 was the lowest recorded since 1984. Survey sample composition has averaged 30/100/40 for the previous 10 years (1997-2006). The previous 5-year-average (2002-06) sample size was 2,052 elk.

Hunters were asked to provide incisor teeth from both bulls and antlerless elk in the 2007 harvest. The teeth were aged by an independent laboratory. The purpose was to obtain accurate age data which helps biologists understand the age structure of the herd. When combined with harvest and herd composition data, such data improves NDOW's population models and estimates. Teeth were obtained from 45% of the bulls, and 31% of the antlerless elk harvested in this unit group during 2007. Ages of bulls ranged from yearlings to 14 years and indicate an average age of 5.7 years (minor adjustment to average based on point class data). The teeth from antlerless elk indicate a wide distribution across age classes and ranged from calves to 19 years. Antlerless elk in the sample averaged 5.3 years of age. Similar studies for bulls conducted in 2001-2003 and 2006 yielded average ages of 5.0, 5.2, 5.6 and 5.8 years, respectively (minor adjustment to average based on point class data).

Habitat

Following improved conditions from mid-2004 through mid 2006, habitat conditions deteriorated substantially in 2007. During the last 5 months of 2006, precipitation measured at Ely by the National Weather Service totaled 56% of average. This was followed by 65% of normal precipitation during 2007. Only 47% of average moisture was recorded during the April through June period. Average temperatures were much warmer than normal during the months of March through August. This resulted in modest plant growth and early desiccation of grasses and forbs. Reduced cover and nutritional values, as well as reduced water distribution were unfavorable for the production and survival of elk calves. The 2007-08 winter was colder than average. Several storms brought high winds, cold temperatures and dry snow. Hard, drifted snow accumulated in many valley areas and persisted due to the prolonged cold. This resulted in restricted access to some forage resources and may have depressed the survival rates of calves that were already in poor condition coming into the winter. From October 1, 2007 through early April 2008, the precipitation total for Ely stands at 56%. Local mountain Snotel sites have recorded between 75% and 80% over the same period. Snow course surveys conducted by NRCS have measured the April 1 snow pack at 90+% county-wide. Spring habitat conditions for elk will be below average at low to mid elevations unless spring precipitation totals return to average levels.

Elk habitat in White Pine County is under increasing threat from the development of homes and possibly a ski resort. Private parcels are slowly being subdivided and sold, many of which are in prime big game habitat. Avenues for proactive purchases, easements or transfers need to be explored.

Population Status and Trend

Unless environmental conditions improve dramatically prior to the dry summer months, calf production in 2008 may be below average for the second consecutive year. Recent management has been aimed at controlling elk numbers in some of the larger units while allowing for growth in other units that have not yet reached objectives. The point-class of harvested bulls, as well as age data from tooth analysis indicate a continued presence of mature bulls in the population. Population modeling over the past 5 years has focused on a better accounting of the bull segment within the population. Age data collected during 5 of the last 7 years has forced a higher estimate of the bull to cow ratio. At the same time, modeling shows a

weakening in the age structure of mature bulls. A record 2007 harvest and low recruitment have contributed to a lower population estimate for 2008. Because of this, the harvest levels needed to meet management plan objectives in 2008 will be lower. Overall quota recommendations for 2008 will be lower than those of recent years.

Units 121, a portion of 104, 108 Cherry Creek, North Egan, Butte and Medicine Ranges: Northern White Pine County
Report by: Russell Woolstenhulme

Survey Data

Winter ground surveys conducted during 2008 resulted in the classification of 78 elk; yielding ratios of 27 bulls/100 cows/35 calves. The low bull ratio is likely a result of the limited access from the ground.

Habitat

Precipitation for Unit 121 has been below normal for an extended period prior to the winter of 2007-2008. The winter of 2007-2008 resulted in an average amount of precipitation that needs to be followed by good precipitation through the spring and summer to improve droughty conditions in Area 12. Small fires north of Piscevich Summit, within the Cove and near Augustine Springs, as well as vegetation modification in Smith Valley in the Egan Range could provide some quality elk habitat in the next few years. Horse round-ups were conducted in the Cherry Creek Range and Butte Valley during the summer of 2006, which undoubtedly will help habitat conditions for elk as well.

Population Status and Trend

This elk herd has increased slightly over the last few years; however increases have come slowly due to limited calf production. The absence of an antlerless elk harvest should help facilitate the maintenance and continued slow growth of the herd. Bull tag quota recommendations are expected to be similar to last year.

Units 131,132, White Pine, Grant and Quinn Canyon Ranges: Southern White Pine and Eastern Nye Counties
Report by: Mike Podborny

Survey Data

No post-season herd composition survey was conducted for elk in 2008. There were 160 elk classified in January 2007; yielding ratios of 28 bulls100 cows/50 calves. There was no survey conducted in 2006. The 2005 survey resulted in 110 elk classified; yielding ratios of 18/100/35.

Habitat

A wildlife water development was built by volunteers working with the Forest Service and funding from the RMEF on the east side of Unit 131 in 2007. This was the fifth water development built for big game in Unit 131 in the last 10 years with an additional project scheduled for 2008. An elk-proof fence was constructed around the Forest Home Ranch in Unit 132. After completion in August, the 30 elk using the field dispersed into the Grant Range and did not return to the field. This project was funded from the Elk Depredation fund supported by sportsman's dollars. Work is continuing on several aspen fencing projects in the Aspen Spring area of Unit 131 with the Forest Service. There is a tremendous opportunity to improve habitat for elk and other wildlife through vegetation projects in the extensive Pinion/Juniper forests that exist throughout this unit group.

Population Status and Trend

The 2008 population estimate for the elk herd in Units 131 and 132 is 290 elk, an increase of 6% from the 2007 estimate. The population estimate was based on a calf ratio of 29 obtained in the Area 11-22

elk survey. The revision of the White Pine County Elk Management Plan, which began in December 2003, is waiting for Wildlife Commission approval. The revised plan will combine Units 132 and 131 with a single objective of 300 elk in both units. Cow hunts were initiated in 2007 and tags will increase in 2008 to slow herd growth as the population nears the objective.

Units 161 - 164: North-Central Nye and Southern Lander and Eureka Counties
Report by: Tom Donham

Survey Data

An aerial composition survey was conducted in early February 2008, in Unit 162. Due to resource and equipment constraints, very little time was spent searching for mature bull groups at higher elevations, which resulted in a low observed bull ratio. Cow/calf/young bull groups were located in normal winter use areas in both the northern and southern portions of Unit 162. During the survey, a total of 372 elk was observed. The sample included 35 bulls, 242 cows, and 95 calves. The observed calf ratio indicates that the Area 16 elk population experienced good production and recruitment despite recent drought conditions which impacted many other wildlife species. The previous survey took place in December of 2006 when a total of 197 elk was observed. The sample included 31 bulls, 121 cows, and 45 calves.

Population Status and Trend

The current Unit 162 elk population is the result of a release of 50 elk in January 1979. Following the 1979 release, the population increased steadily, and the inaugural elk hunt in Unit 162 took place in 1984. From 1984 to 2000, tag quotas remained conservative to allow the population to expand. During that time frame, the population was being managed under guidelines set in place by the Central Nevada Elk Inter agency Elk Agreement. The agreement limited the population's size to approximately 425 adult animals.

In an effort to remain in compliance with the population objective set forth in the agreement, tag quotas were increased significantly for the 2000-2001 season. At about this same time, the Nevada Board of Wildlife Commissioners asked the Nye County Advisory Board to Manage Wildlife to take the lead in creating an elk sub-plan covering all of central Nevada in accordance with the Nevada Elk Species Management Plan. The new plan, the Central Nevada Elk Plan (CNEP), was created through a coordinated effort between the Nevada Department of Wildlife, federal land management agencies, livestock and farming representatives, sportsmen, county representatives, and the general public from around the state. The plan was completed and approved by the Commission in January 2004.

The CNEP provides management direction for Management Areas 16, 17, 21, and 25. Management Areas 21 and 25 were not considered for establishment of elk herds in the new plan. During the planning process new population objectives were set in place, allowing for growth in the Management Area 16 elk population. During the 2004-05 elk season, reductions in tag quotas reflected this change in harvest strategy. Reduced antlerless elk harvest and good production have resulted in an increasing trend for the Management Area 16 elk population since. As the population moves towards the new objective, NDOW will continue to recommend tag increases in order to control and keep up with growth of the population. By recommending quotas that keep up with population growth, a drastic increase in the quota, such as that seen in 2000-2001, may be avoided when the population nears the new objective.

The majority of the Management Area 16 elk population continues to occupy the Monitor Range, Unit 162. The population in Unit 162 consists of 2 core herds. The Table Mountain herd, which is the larger of the 2 herds, spends much of the year on Table Mountain in Nye County, and winters in the southern half of the Monitor range. The Butler/Willow herd spends much of the year in the Butler Basin/Willow Creek area and winters in the northern portion of the Monitor Range. In recent years, a small herd has established itself in Unit 163 in the Hot Creek Range. Observations of both bulls and cows have become more common in the Toquima Range, Unit 161. Elk movement from Management Area 16 into Management Area 17 to the west has also resulted in an established herd there. In December 2007, 5 cow elk were fitted with radio collars in Unit 173 in order to determine seasonal use areas and movement patterns of this newly established herd.

The population model for Unit Group 161-164 predicts a pre-hunt adult population estimate of approximately 560 animals.

Unit 231, Wilson Creek Range: Lincoln County
Report by: Mike Scott

Survey Data

Aerial surveys were conducted during February 2008 and resulted in a total of 353 elk observed. The classification of these elk was 121 bulls, 162 cows, and 70 calves resulted in a ratio of 75 bulls/100 cows/43 calves. Of the 121 bulls observed, 50% were classified as spikes to 4-points. The previous survey was conducted during February 2007 in Unit 231 and resulted in the classification of 375 elk. These included 128 bulls, 169 cows, and 78 calves, for a ratio of 76/100/46.

Habitat

Area 23 has numerous proposed projects that will have direct negative effects on elk habitat. Proposed water pipelines, associated power lines, and a large scale wind energy facility on White Rock Mountain, Table Mountain, Mount Wilson, and Tub Peak will likely have permanent, long-lasting, negative effects on elk habitat. The construction of many new roads and increasing traffic for construction and maintenance of the 400 proposed wind-powered generators in elk habitat will probably mean the end of trophy elk hunting in Area 23. The majority of the high elevation summer habitat, used by cow elk as calving habitat, is threatened by this project. Should this project be completed, NDOW will no longer have any ability to fly big game surveys in the high elevations of this area. Currently, wild horse numbers remain above the appropriate management level and are having a detrimental effect on elk habitat. The many burns throughout Area 23 are generally beneficial for elk; however, overuse by wild horses has resulted in very little forage available in many of these areas. NDOW and BLM are planning to install several water developments for elk in various locations throughout this area. Fall and spring precipitation has been lower than average although timely, and overall, elk habitat appears to be in good condition.

Population Status and Trend

Higher-than-average harvest resulted in a total of 210 elk removed by hunters during all seasons. This included 145 antlerless and 65 antlered elk being harvested. This is by far the highest number of elk removed from this unit since the first hunt was instituted in 1990. The area appears to be receiving large numbers of elk from adjacent areas each year in order to maintain the high harvest as well as the high numbers of elk observed on post-season surveys. This area probably has the most aggressive harvest strategy for elk of any unit in Nevada and is still the destination for a great number of shed antler collectors because of the high post-season bull ratio. The majority of these bulls spend a large portion of the winter on the high ridges of Table Mountain, the area proposed for wind energy development.

According to the *Lincoln County Elk Management Sub plan*, which was approved by the Wildlife Commission in 1999, the Nevada Department of Wildlife will maintain the number of elk in the area at approximately 350 animals. Quotas recommended for the 2008-09 season will reflect the Departments' commitment to maintain the elk population near this level. Area 23 is located between Area 22 and Utah's Southwest Desert unit, both of which have much higher populations of elk. The Area 23 elk herd can see large increases in the population due to movement of elk across area and state borders. The computer-generated population estimate for 2008 is 430 animals, compared to 450 in 2007.

Unit 241-242, Delamar and Clover Mountains: Lincoln County
Report by: Mike Scott

Survey Data

Surveys were conducted during February 2008, but did not result in any elk being observed. The previous survey, conducted in February 2007 also did not result in any elk being observed. No elk have been

observed since the 2005 survey. NDOW plans to attach radio-telemetry collars to elk in the near future in an attempt to discover seasonal use areas.

Habitat

Habitat conditions appear to be good as a result of late winter precipitation. Areas burned in 2005 appear to be recovering so as to be very suitable for elk. Much of the burned area was pinyon juniper forest, which seems to become very good elk habitat for some time after burning. NDOW and BLM are planning to install a number of water developments throughout Area 24 which will likely have some benefit to the elk population.

Population Status and Trend

Only 2 elk were harvested from Area 24 during the 2007-08 hunting season. These included 2 6-point bulls. The computer-generated population estimate for Area 24 is 60 animals, similar to the 2007 estimate.

Unit 262, Spring Mountains: Clark and Southern Nye Counties
Report by: Patrick Cummings

Survey Data

In February 2008, a 4.1-hour aerial survey conducted in the Spring Mountains yielded a sample of 108 elk. The observed sex and age ratios were 13 bulls and 14 calves per 100 cows. The noted calf-to-cow ratio was among the lowest on record. As in past years, the aerial survey was focused in the area around the Cold Creek Community. Elk were encountered north of Mack's Canyon, on the north side of Willow Peak and in the Willow Creek Drainage. No elk were encountered on the McFarland Burn.

Habitat

Severely degraded vegetative conditions on the McFarland Burn were noted in 7 aerial surveys conducted between 2002 and 2008, and likely the reason fewer elk have been encountered in the area. Degraded habitat is largely the result of an over population of feral horses superimposed on effects of drought conditions.

In December 2005, the Las Vegas District, Bureau of Land Management (BLM) issued a Decision Record and Finding of No Significant Impact for establishment of Appropriate Management Levels (AML) in the Johnnie, Muddy Mountains and Wheeler Pass Herd Management Areas (HMA). The established AMLs for horses in the Johnnie HMA and Wheeler Pass HMA are 0 and 47-66, respectively. The established AMLs for burros in the Johnnie HMA and Wheeler Pass HMA are 54-108 and 20-35, respectively.

In January 2007, BLM and United States Forest Service (USFS) conducted gathers of feral horses and burros in the Johnnie HMA and Wheeler Pass HMA. Through theses efforts, 368 horses and 400 burros were captured. In the Wheeler Pass HMA, of the 289 horses gathered 240 were removed and 45 were released back into the Spring Mountains. BLM has indicated 61 horses were left in the Wheeler Pass HMA. Thirty-seven burros captured in the Wheeler Pass HMA were removed, resulting in an estimated 30-45 burros remaining in the HMA. In the Johnnie HMA, of the 79 horses captured 49 were removed and 30 were released back into the Spring Mountains. BLM has indicated 41 horses were left in the Johnnie HMA. All of the 363 burros gathered in the Johnnie HMA were removed, resulting in an estimated 75-110 burros remaining in the HMA. Recently, in an inter agency coordination meeting held on 13 March 2008, the BLM horse specialist in the Las Vegas District indicated horse numbers were well above AML in Johnnie HMA and Wheeler Pass HMA, and that the next gather will not occur for another 5 years.

Evidence of elk avoidance of roads and decrease in habitat use adjacent to roads is abundant in literature. Moreover, avoidance behavior becomes exacerbated in roaded areas adjacent to openings (burns) and meadows. Based on well-documented findings, another factor that has influenced elk distribution has been increased off-highway vehicle (OHV) use. In recent years, recreational use of OHVs in the

Cold Creek area and on the McFarland Burn has increased substantially.

In June 2004, the Humbolt-Toiyabe National Forest issued a Decision Notice and Finding of No Significant Impact for Spring Mountains National Recreation Area Motorized Trails Designation Project. The decision to implement alternative five (with modifications) as summarized in the respective Environmental Assessment involves minimal closure of newly established roads on the McFarland Burn. Thus, the recently authorized management prescription for motorized trails ensures the status quo on the McFarland Burn for the foreseeable future.

Population Status and Trend

The population estimate for elk inhabiting the Spring Mountains is 130, and rather than reflecting an increase relative to the estimate (120) reported last year, accounts for required revision of the population model to ensure demographics remain consistent with the recent aerial survey sample.

Elk habitat quality throughout most of Unit 262 is marginal. Elk have existed on a low nutritional plane limiting reproduction and recruitment. Calf recruitment in recent years has been below levels necessary to maintain the population. Formerly, under ideal conditions marked by lower horse numbers and normal precipitation receipts, the McFarland Burn afforded early seral, quality forage necessary for maintenance, growth and reproduction. In the near future, meaningful efforts to improve elk habitat must entail management of horse and burros numbers consistent with AMLs and completion of habitat improvements. Elk habitat in the Spring Mountains can be enhanced through seeding areas recently burned and by increasing water availability.

DESERT BIGHORN SHEEP

Units 044, 182: East and Stillwater Ranges: Pershing and Churchill Counties
Report By: Jason Salisbury

Survey Data

An aerial composition flight of Units 044 and 182 was conducted in late September 2007 resulting in the observation of 117 sheep, including 23 rams, 59 ewes, and 35 lambs. The number of sheep observed during this survey was the highest recorded to date for this area. Surveyed areas included the East Range and the east side of the Stillwater's from McKinney Pass to Box Canyon.

Population Status and Trend

The population of bighorn sheep inhabiting the East Range and the Stillwater Range has shown a stable trend for the last several years. This population occupies steep and rugged terrain inundated with large expanses of pinyon pine. Tree cover limits the sight ability of the bighorn sheep making the survey difficult. The population may be considerably larger than the survey shows but the difficulty in detecting the animals to accurately ascertain the population density and distribution will never be achieved until tree canopy densities are diminished. It is also believed that the true ruggedness of the country deters lion hunter harvest in Unit 182. It is well known that lions have a significant impact to the bighorn sheep herd in the Stillwater's observed by hunters as well as the area biologist. The East Range over the last several years has served as a nursery for lamb production and is always exceedingly higher when compared to the Stillwater Mountain Range as a whole.

Units 131 White Pine Range: Southern White Pine and Eastern Nye Counties
Report by: Mike Podborny

Harvest Results

The 2007 Desert bighorn sheep hunt in Unit 131 was the first hunt in the White Pine Range since the release of 25 bighorns in 1999. A seven-year-old ram was harvested in the Duckwater Hills on opening day.

Survey Data

In February 2008 a ground survey was conducted with the aid of telemetry equipment. Forty-two bighorns were classified; yielding ratios of 140 rams/100 ewes/40 lambs. Additional bighorns were located with telemetry gear but no visual sightings of the animals were made. A helicopter survey of mule deer and elk in January 2007 resulted in 20 bighorns classified; yielding ratios of 166/100/67.

Habitat

Snow at higher elevations and springs at lower elevations provide water for bighorns in the White Pine Range. An artificial water development was built by the Forest Service and sportsman volunteers in 1989 near White Pine Peak. This guzzler is now in the Currant Mountain Wilderness and a 2004 inspection indicates the guzzler is only partially functioning with maintenance needed. An inspection of this guzzler is planned in 2008.

Population Status and Trend

Twenty-four Desert bighorn sheep were released into the White Pine Range in October 2007. The augmentation of sheep from Mt. Jefferson in the Toquima Range consisted of 19 adult ewes, 3 male lambs and 2 female lambs. Two adult ewes were fitted with GPS/VHF collars and 5 with VHF collars. As of March 2008 all collared bighorns were alive and remain in the White Pine Range. There are 2 distinct populations of Desert bighorns living in Unit 131; the Currant Mountain population and the Duckwater population. Additional

bighorns from the 1999 release have been residing in the Pancake Range of Unit 164 and this unit will be combined with Unit 131 for the 2008 desert bighorn hunting season. The augmentation of ewes and lambs and moderate lamb recruitment indicates the population is increasing with mature rams available for harvest.

Unit 133, 245, Pahranagat and Mount Irish Ranges: Lincoln County
Report by: Mike Scott

Survey Data

No surveys were completed during the reporting period. The previous survey was conducted in September 2006 and resulted in a total of 56 sheep observed. These included 17 rams, 26 ewes, and 13 lambs for a ratio of 65 rams/100 ewes/50 lambs.

Population Estimate, and Trend

This population has shown a stable to increasing trend for the last few years. The computer-generated population estimate for this area is 100, compared to 90 in 2007.

Unit 134, Pancake Range: Nye County
Report by: Tom Donham

Survey Data

An aerial composition survey was conducted in Unit 134 during mid September 2007. A total of 176 sheep was observed including 42 rams, 98 ewes, and 36 lambs. During the 2007 survey period, sheep were found to be widely spread in Unit 134. Sheep were observed in the Twin Springs Slough area, in many areas on Palisade Mesa, along the Citadel, and along The Wall. In addition to being widely spread, the size of the groups detected during the survey was below average. This was likely due to drought conditions having impacted the availability and quality of forage resources, forcing the normally large groups to disperse. During the previous survey, conducted in 2005, a total of 205 bighorn sheep was classified including 61 rams, 118 ewes, and 26 lambs. Despite drought conditions experienced during late 2006 and throughout 2007, survey data indicate that production increased this past year to average levels following several years of below average production.

Population Status and Trend

The desert sheep population that now inhabits Unit 134 is the direct result of a reintroduction effort that occurred in 1984 with the release of 26 animals. Following the initial release, the herd quickly established itself. The herd has done so well since, that it has been used as a source of transplant stock on 3 different occasions. Capture operations conducted in 1996, 1998, and 2003 resulted in the translocation of 78 animals into other mountain ranges of the state.

Following the 1998 capture effort, the Unit 134 sheep population experienced a decline in numbers. After this decline however, the herd exhibited steady growth until 2003. Beginning in 2003, the herd began to experience below average production, which resulted in a decreasing trend for the herd. Drought conditions as well as high sheep densities were likely contributing factors. No survey was conducted in 2006, but hunters reported seeing fair numbers of lambs during the 2006 season. The 2007 survey data indicate that the herd once again experienced good production which should allow the population to stabilize, at least in the short-term.

The population model for Unit 134 predicts a pre-hunt adult male population of approximately 72, and an overall population estimate of approximately 210 adult animals.

Unit 161, Toquima Range: Northern Nye County
Report by: Tom Donham

Survey Data

An aerial composition flight was conducted in Unit 161 during mid September 2007. A total of 238 sheep was observed in the Mount Jefferson area including 64 rams, 118 ewes, and 56 lambs. A comparatively small amount of time was spent flying the more rugged, precipitous terrain around the perimeter of Mount Jefferson, which is believed to have resulted in the somewhat low observed ram ratio. Survey data gathered during the 2007 flight indicate that despite recent drought conditions, production increased from below average levels experienced since 2003. However, the size of the groups of sheep detected during the survey was noticeably below average, and the groups were much more widely scattered than is typical on Mount Jefferson. These observations indicate that drought conditions likely impacted the availability and quality of forage resources on Mount Jefferson. During the previous survey, conducted in 2006, a total of 245 sheep was observed in the Mount Jefferson proper area including 52 rams, 138 ewes, and 55 lambs.

Population Status and Trend

A reintroduction effort was initiated in Unit 161 in 1982, with the release of 22 desert sheep. In 1983, an additional 4 animals were released. Following these releases, the herd quickly increased to a level much higher than originally anticipated. The Mount Jefferson herd has done so well since, that it has served as a source of transplant stock on 4 occasions. A combined total of 101 sheep has been captured and relocated during operations occurring in 2002, 2003, 2006, and most recently in 2007. Animals from Mount Jefferson have been relocated to the Clan Alpine and Tobin Ranges of Churchill and Pershing Counties, respectively, and to the Grant/Quinn and southern White Pine Ranges of Nye County
.
The core herd in Unit 161 occupies Mount Jefferson, within the Alta Toquima Wilderness, but recently a small herd has established itself in the area near Northumberland, north of the main herd. The core herd on Mount Jefferson experienced lowered production from 2003 to 2006 likely due to a combination of drought conditions and high sheep densities. The 2007 survey saw an increase in production that should result in a stable to increasing trend at least in the short-term.

The population model for Unit 161 predicts a pre-hunt adult male population of approximately 125, and an overall population estimate of 260 adult animals.

Unit 163, Hot Creek Range: Nye County
Report by: Tom Donham

Survey Data

No aerial composition survey was conducted during 2007 in Unit 163. The previous composition flight occurred in 2006 when a total sample of 77 sheep was classified. The sample consisted of 19 rams, 45 ewes, and 13 lambs. The 2006 survey sample was the largest sample to date in Unit 163. The survey was conducted from Warm Springs on the south end of the Unit to Hot Creek Canyon and covered areas on both the east and west sides of the range. Morey Peak was not flown during the 2006 survey due to time constraints and increasing winds. Unit 163 is scheduled to be surveyed again during the fall of 2008.

Population Status and Trend

The desert sheep population in the Hot Creek Range was re-established through releases occurring in 1994 and 1995. Following the releases, the herd quickly established itself and increased to a comparatively moderate level. Due to drought conditions and resultant low production rates, the herd exhibited a decreasing trend beginning in 2001-02. Improved climatic conditions benefited the herd in 2004 and 2005, and increased production in 2005 stabilized the herd. Production remained below optimal levels in 2006, and while no survey was conducted in 2007, drought conditions likely impacted the herd yet again over the past year.

Unit 162 was combined with the Unit 163 hunt for the first time in 2005 due to an increasing number of sheep being observed in the southern portion of the Monitor Range. The Unit 162 sheep population is not considered large enough to warrant its own hunt, but potential exists for some limited opportunity in the unit. 2007 saw the first 2 rams harvested out of Unit 162.

The population model for Unit 163 predicts a pre-hunt adult male population of approximately 31 rams and an overall population estimate of 80 adult animals. A population model for Unit 162 has yet to be developed.

Unit 173, Toiyabe Range: Northern Nye County
Report by: Tom Donham

Survey Data

A brief survey was conducted in August 2007 from the ground in the Peavine Canyon area of Unit 173. A total of 41 sheep was observed including 10 rams, 25 ewes, and 6 lambs. Although the sample size was small, all indications are that drought conditions have impacted desert sheep production in Unit 173. The observed lamb ratio was nearly half of what it was in 2006, and less than half that observed in 2005. The previous aerial composition flight was conducted in Unit 173 during late September 2006. A total of 69 sheep was observed including 19 rams, 34 ewes, and 16 lambs. The 2006 surveys took place predominantly on the south end of the Unit where the majority of the herd exists.

Population Status and Trend

Due to human impacts, the historically substantial desert sheep population of the Toiyabe Range was reduced to a mere estimated 50 animals by the early 1980's. In an effort to augment and stimulate growth in the herd, a total of 21 desert sheep from southern Nevada was released in 1983 and 1984. An additional release of 9 rams from southern Nevada took place in 1993. Due to the success of the initial releases, the desert sheep season was reopened in Unit 173 in 1988. The Unit had been closed to sheep hunting since 1969.

The Unit 173 sheep population was used as transplant stock in 2005 due to increasing densities in the Peavine Canyon area as well as continued private land depredation problems. During the fall of 2005, a total of 12 sheep was captured from the Seyler Peak area of Unit 173 and combined with sheep captured from the Monte Cristo Range and the Gabbs Valley Range to be released in the Grant/Quinn Range of eastern Nye County.

The Peavine Canyon and Seyler Peak areas of the southern Toiyabe Range contain the largest segment of the Toiyabe herd. For several years, frequent bouts with drought conditions have caused increasing depredation problems in Peavine Canyon. Drought conditions lure sheep into pastures and fields where water and better quality forage occur. Due to improved range conditions in 2004 and 2005, sheep use on private lands eased somewhat, but 2007 saw a return to heavy sheep use in private fields and meadows. Desert sheep do occur throughout much of the Toiyabe Range, but densities are significantly lower north of Seyler Peak, and groups of animals are much smaller and more dispersed. Sheep also occur as far north as Bunker Hill north of Kingston Canyon, but growth of this portion of the herd will not be encouraged until such time as a domestic sheep use in that area is discontinued and the risks of a disease event are reduced.

Currently the Unit 173 herd is considered stable. The computer population model predicts a pre-hunt adult male population of approximately 58 and an overall population estimate of approximately 150 adult animals.

Unit 181, Fairview Peak, Slate Mountain, and Sand Springs Range: Churchill County
Report by: Jason Salisbury

Survey Data

Aerial surveys of the Sand Springs and Fairview Ranges occurred in September of 2007 and resulted in the

classification of 235 sheep. This total included 95 rams, 93 ewes, and 47 lambs for a ratio of 102 rams/100 ewes/51 lambs.

Habitat

This past summer range conditions on Fairview, Slate Mountain, and Sand Springs experienced dry conditions and reduced quality of forage. These drought-like conditions reduced flows to springs and seeps. Most of the natural occurring water in Unit 181 is located at the lower elevation of the Sand Springs Range and Slate Mountain. A water development is located on the west side of Fairview Peak but has been shown to only receive limited use. The best quality forage in Unit 181 occurs in the higher elevation of Fairview Peak. In order to allow bighorn sheep the opportunity to utilize the higher quality feed a water development will need to be constructed at the higher elevations of Fairview Peak to allow for continued use of bighorn sheep throughout the summer months. In 2007 water was secured at 2 different spring sources in the Sand Springs Range. Pipe rail fences were constructed around the spring sources to protect the riparian ecosystem from overuse by domestic and feral ungulates. One site has the ability to store 2,450 gallons of water and the other site can store 3,800 gallons of water. Future water developments are needed at the upper elevations in the Sand Springs Range to allow for dispersal of bighorn sheep from the few natural springs that sheep use during the summer months.

Population Status and Trend

The Unit 181 desert bighorn sheep population is now estimated at 180 animals. This is a 25 percent decrease in what was reported last year. During November and December of 2007 the Unit 181 desert sheep herd experienced a catastrophic die-off on Fairview Peak and Slate Mountain. The inherit cause of the die –off is (*Pasteurella multocida)* a pathogenic bacteria that affects the lungs of sheep causing pneumonia-like symptoms.

Field observations were made by the area biologist while the die-off was in progress. The first of November a hunter contacted Nevada Department of Wildlife (NDOW) regarding a coughing ram on Slate Mountain. The biologist responded and found one 6 year old ram on Slate Mountain coughing. During the opening weekend of the 2007 desert bighorn sheep season hunters were contacted and asked if they would take part in collecting biological samples from harvested animals to look at the principal causes of the coughing episodes. During the months of November and December the population of bighorn sheep inhabiting Fairview and Sand Springs Ranges continued to experience a die-off. Observations for the spring of 2008 show that the remaining herd is not exhibiting the same die-off characteristic that was observed in November and December 2007.

In order to curve the population growth of the bighorn sheep population in relation to habitat and quality of forage available, the Nevada Department of Wildlife captured bighorn sheep in October of 2007 from the Sand Springs Range, Fairview and Slate Mountain. The complement of animals included 18 ewes, 2 male lambs and one male lamb aged at 1.5 years. These animals were translocated to Utah. Due to the vigor of the Unit 181 bighorn sheep population, a capture and relocation operation was scheduled for January 2008, but the bacterial infection which led to a die-off precluded the capture operation from materializing. The dynamic growth tendency of this herd has allowed it to prosper uninhibited it from any lack of resource except for water. The prediction that this population will recover from the die-off with adequate individuals surviving is very likely. It is thought with the placement of adequate water the population will disperse itself sufficiently but will still need to be kept within carrying capacity of the habitat quality and quantity. If it is deemed that removal of animals is warranted and that capture and transplanting of these animals into another population is not in the best interest of the health and welfare of other populations of bighorn sheep then other alternatives will be needed to address a healthy self-sustaining population. An example of this would be the sport take of ewes. With adequate older age class rams available in the Sand Springs Range, the bighorn ram season will remain open in 2008.

Unit 183, Clan Alpine Range: Churchill County
Report by: Jason Salisbury

Survey Data

An aerial composition survey was conducted in the Clan Alpine Range of Unit 183 in September 2007. A sample of 135 bighorn sheep were classified, including 34 rams, 63 ewes and 38 lambs with a computed ratio of 54 rams/100 ewes /60 lambs.

Habitat

Plans for maintenance on the Dummy Canyon water development are set for the summer of 2008. The Dummy Canyon water development will be rebuilt with new tanks, gutters, aprons, and fencing. This water development has been exposed to limited use in its lifetime because of its low overall storage capability. In the summer of 2007 the Little Angel water development was retrofitted with 1,200 gallons of additional storage, an extension of metal apron to the existing apron, new gutters, and a pipe rail fence design surrounding the drinker. The maintenance provided on these units will enable the herd to utilize them with full efficiency.

In 2007 Cow Canyon area of Unit 183 was keyed in on by sheep hunters. Four out of 6 hunters harvested rams out of the Cow Creek drainage. The Deep Creek drainage north of Cow Creek has been negatively impacted by the overuse of feral horses. The removal of these feral horses would help improve forage conditions in the Deep Creek drainage as well as the adjacent Cow Creek Drainage.

Population Status and Trend

The desert sheep population inhabiting the Clan Alpine Range is projected to grow in 2008. It is estimated that the population is around 250 animals and reflects a 22% increase relative to the estimate of 220 sheep reported last year. Observations on lambing grounds in 2008 in Unit 183 indicate a large presence of lambs observed. The forage conditions exhibited in 2007 resulting from the increased precipitation received, should allow for increased survival of lambs into the fall. The lamb recruitment for this desert sheep population has allowed for (above maintenance level recruitment) and should foster a vigorous population trend well into the future. The habitat landscapes and the immense expanses of adequate bighorn sheep habitat should allow for the population to increase density and distribution into varying degrees of habitats.

Unit 184, Desatoya Range: Churchill and Lander Counties
Report by: Jason Salisbury

Survey Data

A late September 2007 survey resulted in the observed total of 120 bighorns, including 44 rams, 50 ewes and 26 lambs. The resulting ratio was 59 rams/100 ewes/59 lambs. Areas surveyed included the Desatoya Mountains, the Eastgate Hills, and the Greyback and Broken Hills.

Habitat

The Broken Hills water development was built in the south western portion of Unit 184 in 2007. This water development provides a water source at the southern most end of Unit 184 and should enable the bighorn to occupy habitat surrounding the water development as well as encourage sheep movement between the Greyback Hills, the Broken Hills, and the Monte Cristo Range. The Greyback hills water development was upgraded in the summer of 2007 with new pipe rail fence designs as well as gutters, additional apron, and a drinker. Habitat conditions within in Unit 184 have improved in 2008 due to above average precipitation in the higher elevations. The snow pack occurring in the Desatoya's should allow for prolonged moisture and more advantageous range conditions going into the hot summer months.

Population Status and Trend

In December of 2007 the Desatoya Mountain Range provided transplant stock to the Wassuk Range in Unit 202. Twenty-eight bighorns comprised of 25 ewes, 1 female lamb, 1 male lamb, and 1 male aged at 1.5 years were captured off the Desatoya's to reduce congestion and to maintain the hardiness of the herd. This year's lamb recruitment rate of 59 lambs/ 100 ewes provides for an above maintenance level recruitment. This level recruitment has been observed for the last 4 consecutive years and will enable this herd to provide transplant stock well into the future. The highest ever observed lamb ratio for Unit 184 occurred in 2004 and was represented by 68 lambs/ 100 ewes. Lamb recruitment has averaged between 40 and 63 lambs/100 ewes since 1998. The 5-year average for lamb ratios has been 52 lambs/100 ewes. The 2008 desert bighorn sheep population estimate for the Unit 184 Herd is 200 animals and reflects a 5% increase relative to 190 animals reported last year.

Unit 202, Wassuk Range of Mineral County
Report by: Jason Salisbury

Survey Data

A ground survey was conducted in July 2008, in Cottonwood Canyon, and yielded a sample of 20 bighorn sheep. The composition ratio for the sample was 86 rams/100 ewes/100 lambs.

Population Status and Trend

In December 2008, 28 bighorn were released into Cottonwood Canyon on the Hawthorne Ammunition Depot. The capture complement was trapped in Unit 184 of the Desatoya Range. Source stock was chosen from the Desatoya Mountains because the terrain they occupy is similar to Mt. Grant in the Wassuk Range. The release complement was comprised of 25 ewes, 1 female lamb, 1male lamb, and one male aged at 1.5 years. Two ewes were fitted with conventional VHF radio telemetry systems and 2 were fitted with GPS systems. By mid-March 2008, all collars were functioning with live signals except for one GPS collar. One GPS collar ewe had succumbed to predation from a mountain lion. The 2008 bighorn population estimate for the Wassuk Mountains is 90 animals and is a 55% increase compared to last years estimation.

Unit 204, Pine Grove Range: Lyon County
Report by: Jason Salisbury

Survey Data

No survey was conducted during 2007 in Unit 204. The most recent aerial survey occurred in October 2007 and resulted in the classification of 43 bighorn sheep. The composition ratio consisted of 30 rams/100 ewes/57 lambs.

Habitat

The total amount of habitat the sheep can occupy in the East Walker drainage is limited due to the lack of water. Future water developments will expand bighorn sheep habitat and should encourage bighorn use in the upper elevational tables on the east side of the Pine Grove Hills.

Population Status and Trend

The Unit 204 desert bighorn sheep population was established through the initial release of 21 sheep in 1993. A second augmentation of 21 sheep occurred in 1995. The 2007 population estimate for the Pine Grove herd is 70 animals. Currently, production is allowing the herd to experience a stable to increasing trend.

Unit 205, Gabbs Valley Range, Gillis Range, Pilot Mountains: Eastern Mineral County
Report by: Jason Salisbury

Hunt Unit Changes

In 2007, Unit 205 was split into 2 separate desert bighorn sheep units, Unit 205N and Unit 205S. Unit 205N is that portion of hunt Unit 205 north and west of State Route 361. Unit 205S is that portion of hunt Unit 205 south and east of State Route 361. These recommendations were made by the Mineral County Game Board.

Survey Data

No survey was conducted during 2007 in Unit 205 North or South. In October of 2006, a 5.0-hour aerial survey in Unit 205 yielded a sample of 254 bighorn sheep. The sample was the largest recorded and provided a composition ratio of 67 rams/100 ewes/52 lambs. The areas surveyed included the Gabbs Valley Range, Pilot Mountain and the Gillis Range.

Habitat

The Volcano water development was rebuilt in March of 2008. Additional water storage capability was increased from 2,500 gallons to 5,000 gallons of storage availability. The Volcano water development is heavily used by bighorns when water is available. The renovations made to this unit will allow for more transitional movement between Pilot Mountain and the south Gabbs Valley Range. Starting in the summer of 2008, maintenance will be conducted on several large capacity water developments in Unit 205. Some of the projects involved will be replacement of plastic plasmo gutters with deep trough style gutters and other various projects where maintenance is needed. Wilderness is being proposed and pursued in Mineral County. These wilderness designations will restrict off road travel, wind energy, and mining but also could hinder future habitat projects such as water developments and vegetation enhancement projects in the Gabbs Valley Range. Spring sources in the proposed wilderness area are currently in a degraded state. Wild horses dominate waterholes precluding bighorn from utilizing them. Bighorns are therefore forced to use less desirable water sources.

Population Status and Trend

The estimate for the desert bighorn sheep population for Unit 205 is 360 animals and represents a slight increase of 3%. The population is slightly expanding and will continue to grow with lamb ratios consistently staying at 50 lambs/ 100 ewes for the last 3 years. The bighorn sheep hunting season for Unit 205 was split into a north and the south designation for the first time in 2007. The rationale by the Mineral County advisory board was to provide more hunting opportunity to an under-used resource. The 2007 season showed that the average age of ram harvested decreased from 7 years old in 2005-2006 to 5.2 years old in 2007 with the new hunt boundaries designations. There may be many factors that caused a decrease in age structure of harvest including selectivity by the hunter, rams available for harvest and hunter dedication. Older age class rams are still prevalent in the population and will continue to provide hunters with a quality hunt.

Unit 206, Excelsior Range: Mineral County
Report by: Jason Salisbury

Survey Data

No surveys were conducted in 2007 in Unit 206. Aerial surveys conducted in October 2006 resulted in the classification of 46 bighorn sheep. The composition ratio consisted of 30 rams/100 ewes/70 lambs. The Excelsior Mountain Range was the only area surveyed in Unit 206.

Habitat

In February of 2008 the Excelsior water development was rebuilt. The maintenance of the water development included replacing all the tanks, adding apron, new gutter, new pipe rail fence and a drinker. The completion of this project will help alleviate competition between burros and native bighorns. Bighorns are displaced from key water sources because of the territorial dominance of burros. Future plans will call for

increasing the distribution of the core population towards Marietta and the California border. Habitat surrounding the core population including the Candalaria Hills and Miller Mountain may increase the overall density and distribution of bighorns creating a metapopulation.

Population Status and Trend

The population estimate for Excelsior Range is currently 80 animals and is a 12% increase of what was reported last year. The bighorn population in the Excelsior Mountains is stable to a slight increase in overall population size. The 12% increase according to the population model could be contributed to 3 years of above maintenance level recruitment. Hunter observations for the 2007 season indicate harvestable rams available for the 2008 season. Successful hunters that draw the Unit 206 hunt should be cognizant that older age class rams during the season utilize the upper elevations of the Excelsior Mountains as well as the pinyon pine tree cover for concealment. The 2006 lamb ratio of 70 lambs/ 100 ewes as well as the 60 lambs/100 ewes observed in 2004 should help facilitate a rapid recovery for herd growth. The Excelsior bighorn herd started a downward trend in 1999 with lamb production in the high teens lasting until 2002.

Unit 211N, Monte Cristo Range: Esmeralda County
Report by: Tom Donham

Survey Data

No survey was conducted during the 2007 survey period. The previous aerial composition flight was conducted during late September 2006 in the Monte Cristo Range. A total of 216 desert sheep was classified as 52 rams, 100 ewes, and 64 lambs. The 2006 sample was the highest observed since 1998, and was the second highest sample on record for the Monte Cristo Range. The survey was very thorough, and covered nearly all known occupied habitat. Production remained high in 2006, as it had been for several years.

Habitat

During the spring of 2005, a new water development was constructed in the Monte Cristo Range in order to augment natural water sources on the south end of the range that have been impacted by drought conditions. Sheep were observed near the development during the 2006 survey. Recent interest by some groups in establishing a State Park in the Monte Cristo Range may negatively impact the sheep resource, sportsman access, and the Nevada Department of Wildlife's ability to manage the resource if the effort is successful.

Population Status and Trend

Based upon past survey data and random observations of sheep movement between the Silver Peak Range, Lone Mountain, and the Monte Cristo Range, it is thought that the Monte Cristo Range historically served primarily as winter range. In more recent years, this movement has ceased and the 3 ranges support separate and distinct populations of desert sheep. Production has been very good in the Monte Cristo Range over the past several years, and the population is showing an increasing trend. Although no survey was conducted in 2007, drought conditions likely slowed growth of this herd in the short-term.

The population model for Unit 211N predicts a pre-hunt adult male population of approximately 91 rams and an overall population estimate of 210 adult animals.

Unit 211S Silver Peak Range, and Volcanic Hills: Esmeralda County
Report by: Tom Donham

Survey Data

An aerial composition flight was conducted in Unit 211S during mid September 2007. A total of 148 sheep was observed during the 2007 survey including 43 rams, 83 ewes, and 23 lambs. The sample size obtained was the highest on record. Although the observed lamb ratio indicates the herd suffered poor production due

to drought conditions in 2007, the herd is doing well overall. The previous aerial survey was conducted in 2004 when a total of 50 desert sheep was classified as 17 rams, 19 ewes, and 14 lambs.

Habitat

During the spring of 2004, 2 existing wildlife water developments in the Silver Peak Range were completely rebuilt. During the 2006 survey, sheep had yet to return to the areas of the rebuilds in good numbers. During the 2007 survey, it was apparent that sheep were again using the developments consistently. A third water development is scheduled to be rebuilt in the near future.

Population Status and Trend

Historically, survey data and random observations indicated that sheep movement regularly took place between the Monte Cristo Range and the Silver Peak Range. At that time, it was believed that the Monte Cristo Range served primarily as winter range for the Silver Peak herd. This movement has ceased, and the 2 herds are considered distinct populations. In Unit 211S, sheep inhabit the Silver Peak Range, as well as the Volcanic Hills. Numbers of animals using the Volcanic Hills portion of the Unit have increased due to the installation of 2 water developments several years ago, and movement between the 2 ranges occurs on a regular basis. Good production over the past several years has allowed this herd to experience noticeable growth. Due to poor production in 2007, the herd may experience a slightly decreasing trend over the short-term, or until favorable conditions return.

The population model for Unit 211S predicts a pre-hunt adult male population of approximately 54 rams and an overall population estimate of 150 adult animals.

Unit 212, Lone Mountain: Esmeralda County
Report by: Tom Donham

Survey Data

An aerial composition survey was conducted in Unit 212 during mid September 2007. A total of 157 sheep was observed including 34 rams, 93 ewes, and 30 lambs. Although very little time was spent surveying the more heavily treed areas searching for rams, the total sample obtained during survey was the highest since 1987. The observed lamb ratio indicates that like many other central Nevada desert sheep herds, the Unit 212 population experienced lowered production due to drought conditions. The previous aerial composition flight occurred in late August of 2005 when a total of 78 sheep was classified. The sample included 25 rams, 41 ewes, and 12 lambs.

Population Status and Trend

While many other desert sheep herds in central Nevada were entirely wiped out due to human impacts during the late 1800's and early 1900's, a small portion of the desert sheep population that inhabits Lone Mountain survived. No doubt, the rugged inaccessible nature of much of Lone Mountain served to protect the herd from unregulated hunting and mining impacts and allowed them to avoid complete extermination. The Lone Mountain herd also survived a different type of threat during the prohibition era. It is well known that all of the accessible and available water sources on Lone Mountain were used for making whiskey during this period, which likely impacted the herd's access to water. Having struggled through these setbacks, the Unit 212 population increased dramatically once regulations were put into place protecting them and their habitats, and by the 1980's the herd was estimated at over 200 animals. During the later half of the 1980's, the herd served as a source of transplant stock on 2 occasions. A total of 58 sheep was removed during the 2 projects. Following the 1988 capture, the Lone Mountain population experienced a sharp decline, and by 1991 the herd was estimated to total approximately 50 animals. Following several years of remaining static at lowered levels, the herd began to show a slow, but steady recovery due to increased production and survival of adult animals. Although production has not reached long-term averages for several years, the population currently appears to be stable to slightly increasing.

The population model for Unit 212 predicts a pre-hunt adult male population of approximately 50 and an overall population of 160 adult animals.

Unit 221, South Egan Range: Lincoln County
Report by: Mike Scott

Survey Data

Aerial surveys were conducted in the South Egan Range in September, 2007, and resulted in a total of 25 sheep classified. These included 6 rams, 10 ewes, and 9 lambs for a ratio of 60 rams/100 ewes/90 lambs. Other sheep were observed, however, high winds and thick tree cover prevented their classification. This represents the first formal bighorn survey completed in the Egan Range in many years. Most years bighorns are classified during fall or spring mule deer surveys when sheep are found at low elevations.

Habitat, Population Estimate, and Trend

One bighorn sheep hunter reported the presence of domestic sheep in close proximity to bighorns during November of 2007. While this may not always result in die-offs of bighorns, it is very possible that this herd may see significant declines. No sheep were observed during fall deer surveys and spring deer surveys were not done, so no information is available on the recent status of this herd.

The current computer-generated population estimate is 60 animals, similar to the estimate in 2007.

Unit 223, 241, Hiko and Pahroc Ranges, and Delamar Mountains: Lincoln County
Report by: Mike Scott

Survey Data

Aerial surveys were conducted in the Delamar Mountains and Hiko Range during Sept 2007, and resulted in the classification of 59 sheep. These included 15 rams, 32 ewes, and 12 lambs which results in a ratio of 47 rams/100 ewes/38 lambs. Only 13 bighorns were observed in the Hiko Range. The previous survey was conducted in September, 2006 and resulted in the classification of 53 sheep. These included 20 rams, 26 ewes, and 7 lambs for a ratio of 77 rams/100 ewes/27 lambs.

Habitat

Wildfires and off-road vehicles have altered habitat and resulted in bighorns moving away from areas they have historically used. BLM embracing rock-crawling in the Hell's Half Acre area is continuing to result in bighorn aversion in this area, despite the presence of free water. The Delamar Mountains represents the highest potential for growth of this hunt unit population of bighorns. Wildlife Services continues to remove mountain lions that reduce this herd.

Population Status and Trend

This population has showed a downward trend since 2004, when a domestic sheep was removed from the north Hiko Range. That, combined with the Hell's Half Acre rock crawling course dispersing sheep in the south Hiko Range has resulted in lower numbers of bighorns observed throughout the Hiko Range. A total of 53 bighorns were transplanted into the Delamar Mountains in December of 2007. Another release of 50 animals is planned for the summer or fall of 2008. The computer-generated population estimate is 160 animals, compared to 105 in 2007.

Unit 243, Meadow Valley Mountains: Lincoln County
Report by: Mike Scott

Survey Data

Aerial surveys were completed during September, 2007 and resulted in a total of 28 sheep observed. These were classified as 9 rams, 16 ewes, and 3 lambs which results in a ratio of 56 rams/100 ewes/19 lambs. Recent precipitation likely resulted in scattering sheep to areas not surveyed. The low lamb ratio may also have been observed as a result of the low sample size as the adjacent mountain ranges showed higher lamb ratios. The previous aerial survey was conducted during September 2005, and resulted in the classification of 58 bighorns, consisting of 16 rams, 31 ewes, and 11 lambs.

Habitat

Range conditions are good as a result of fall and late winter/early spring precipitation. Large acreages of this range were burned in 2005 and have become invaded by exotic annual grasses. Sheep may find some forage from these grasses during green-up, however, little forage is available after they are cured out. Additionally, the reduction of shrubs throughout the Meadow Valley Mountains for thermal and escape cover is detrimental to the sheep population.

Population Status and Trend

Three collared bighorns from the Delamar release in December of 2007 have moved to the Meadow Valley Mountains. Movement back and forth between these 2 ranges is common. The computer-generated population estimate is 70 animals, similar to the 2007 estimate.

Unit 244, Arrow Canyon Range: Northern Clark County
Report by: Patrick Cummings

Survey Data

No survey was conducted in Unit 244 in 2007. In October 2006, a 5.7-hour aerial survey yielded a sample of 63 bighorn sheep. The observed sex and age ratios were 63 rams and 17 lambs per 100 ewes. The noted lamb-to-ewe ratio was among the lowest on record. Bighorn sheep were encountered throughout much of the interior of the Arrow Canyon Range; alternatively, few sheep were observed on northern and southern extensions of the range. The adjacent Battleship Hills were not included in the aerial survey.

Habitat

Bighorn sheep inhabiting the Arrow Canyon Range and Meadow Valley Mountains will likely be impacted by impending construction and other influences emanating from the Coyote Springs master planned community. The 42,000-acre parcel is situated northeast of the junction of U.S. 93 and State Route 168, and is the largest privately held property for development in Southern Nevada. Construction of the master planned community commenced in 2005.

In the southeast portion of the Arrow Canyon Range, Ash Grove Cement Company plans to construct a limestone quarry to supply an adjacent Portland cement plant. Quarrying limestone will entail drilling and blasting. The limestone quarry is envisioned within 4 sections of Township 16 South, Range 64 East. Of the 4 sections, portions of sections 6 and 7 receive year-round use by bighorn sheep. Section 6 also encompasses the mouth of the largest canyon complex in the Arrow Canyon Range. The west boundary of the quarry is 1.9 miles from Arrow Canyon #1 water development and 3.3 miles from Arrow Canyon #2 (rebuild). Construction on the project is expected to begin in 2006 with plant start up scheduled for 2008.

Population Status and Trend

Severe drought conditions from 2000 through 2002 impacted the bighorn sheep population inhabiting the

Arrow Canyon Range. Successive years of drought resulted in lowered recruitment and reduced survivorship. In recent years however, the herd expanded due to improved environmental conditions brought about by above average precipitation receipts in 2003 and 2004. Most recently, comparatively dry conditions have prevailed since the end of 2005 through March 2008. The 2008 population estimate is 90 adults, and relative to last year, reflects an approximate 10% decline.

Unit 252, Stonewall Mountain: Nye County
Report by: Tom Donham

Survey Data

No survey was conducted during the 2007 survey period. The previous aerial composition flight was conducted in Unit 252 during late September 2006. A total of 175 desert sheep was classified on and around Stonewall Mountain as 37 rams, 103 ewes, and 35 lambs. The 2006 sample was the highest on record with the 1995 sample a close second at a total of 174 animals. The 2006 survey was limited to Stonewall proper and Pahute Mesa south to Yellow Gold Mine.

Population Status and Trend

The Unit 252 desert sheep population is another success story for the Nevada Dept of Wildlife's Big Game Trapping and Transplanting program. The population was re-established through 3 transplant efforts conducted in 1975, 1978, and 1983. Following the establishment of the herd in the Stonewall Mountain area, the herd increased steadily until 1996. During 1996, the population experienced a major decline in the Stonewall Mountain area. The decline appeared to have been due to a major movement of sheep out of the area, as opposed to a disease related die-off. The herd has exhibited a steady increase in the area since, and the trend continues. The herd has reached a level nearly identical to where it was when the decline occurred in 1996. Due to reduced numbers of feral horses in the Stonewall proper area, the habitat is in somewhat better condition than in the mid 90's and it is not anticipated that another movement away from Stonewall will occur.

The Unit 252 population is a difficult one to monitor due to the regular movement of sheep into and out of the Stonewall Mountain area from some of the more inaccessible areas of the Tonopah Test Range. Numbers of sheep as well as herd structure can vary on nearly a day to day basis on Stonewall Mountain and survey data is considered to be a seasonal "snapshot" of the desert sheep population in the area.

Presently, the population model for Unit 252 predicts a pre-hunt adult male population of approximately 64, and an overall population estimate of 180 adult animals.

Unit 253, Bare Mountain and Specter Range: Southern Nye County
Report by: Patrick Cummings

Seasons and Hunt Quotas

Separate quotas were allotted to Bare Mountain and Specter Range since 2005. The objectives in splitting Unit 253 were to disperse harvest pressure and potentially increase hunter opportunity.

In 2007, interest remained high among recipients of Wildlife Heritage Tags and Partnership in Wildlife Tags to hunt rams on Bare Mountain. Thus, the total ram harvest, unchanged from 2006, was 6.

Survey Data

In October 2007, an aerial survey on Bare Mountain yielded a sample of 103 bighorn sheep. The sample was the largest recorded and reflected sex and age ratios of 50 rams and 22 lambs per 100 ewes.

In the Specter Range, a 2.2-hour aerial survey was conducted in October 2007. During the brief survey, 7 rams and 17 ewes were encountered.

Habitat

Overall dry conditions in 2006 and early 2007 resulted in inadequate recharge of many water developments in the Specter Range and on Bare Mountain. In early March 2007, water development inspections revealed 6 projects in the Specter Range were collectively charged to 57% of capacity. On Bare Mountain, available water stores among 3 projects equated to 19% of collective capacity.

In May 2007, the prevailing drought conditions prompted water haul activities. In a collaborative effort, critical funding support from Fraternity of the Desert Bighorn, Nevada Bighorns Unlimited—Reno Chapter and Foundation for North American Wild Sheep enabled payment for contract helicopter services. In the course of 94 sorties, a helicopter delivered 7,500 gallons to 2 water developments in the Bare Mountains. In the Specter Range, nearly 3,000 gallons were delivered to one water development.

In February 2008, the Eagle Basin water development in the Specter Range was upgraded. The water storage capacity of the new, cross-leveling system was expanded from 6,900 gallons to 9,000+ gallons.

Population Status and Trend

The Bare Mountain bighorn sheep population appears stable, and is estimated at 110 adults. In the Specter Range however, events beginning at least as early as Fall 2002 suggest the population has been impacted by disease. Available evidence suggests bacterial pneumonia may be a factor in high mortality among lambs. Recruitment in 5 consecutive years (2003-07) was negligible.

The Specter Range bighorn sheep population remains on a downward trend. Due to successive years of poor recruitment, age cohorts 1 through 6 are thinly represented in the population. In the near future, hunt quotas will need to be adjusted to account for underrepresented age cohorts. The population estimate for the Specter Range herd is 50 - 60.

Unit 261, Last Chance Range: Southeastern Nye County
Report by: Patrick Cummings

Survey Data

No survey was conducted in Unit 261 in 2007. In October 2006, the aerial survey classified 133 bighorn sheep with sex and age ratios of 58 rams and 22 lambs per 100 ewes. To date, the aerial survey was the most extensive in duration and coverage, and resulted in the largest recorded sample. Bighorn sheep were encountered on all the major ridges and mountains that comprise the Last Chance Range.

Habitat

Overall dry conditions in 2006 and early 2007 resulted in inadequate recharge of several water developments in the Last Chance Range. In early March 2007, water development inspections revealed 7 projects were collectively charged to 45%.

In May and June 2007, the prevailing drought conditions prompted water haul activities. In a collaborative effort, critical funding support from Fraternity of the Desert Bighorn, Nevada Bighorns Unlimited—Reno Chapter and Foundation for North American Wild Sheep enabled payment for contract helicopter services. In the course of 107 sorties, a helicopter delivered nearly 8,000 gallons to 2 water developments.

In 2003, bighorn sheep habitat improvements entailed construction of a seventh water development, and upgrade of an existing unit. The new water development is situated on the prominent ridge north of Pahrump. On the north end of the range, the upgrade of a unit involved added water storage capacity and installation of a steel apron.

A consequence of the expanding human population in the Pahrump Valley is habitat degradation resulting from dispersed recreational use of off-highway-vehicles (OHV), and in the recent past, permitted OHV races.

Population Status and Trend

In October 2007, 2 Pahrump residents encountered an undetermined number of bighorn carcasses at and near the Last Chance #5 (LC #) water development. Based on the initial report and follow up investigation, it was believed that 10 bighorn sheep died during summer 2007. In the absence of rain, the 2 central water developments were expected to go dry in early summer 2007. It was deemed cost prohibitive to haul water to LC #5 and LC #4, and reasoned that sheep under hydration stress in the central areas would move to water developments situated to the north or south.

The 2008 bighorn sheep population estimate is 120, and reflects a decrease relative to the estimate (130-140) reported last year.

Unit 262, Spring Mountains (La Madre, Red Rock and South Spring Mountains) and Bird Spring Range: Western Clark County
Report by: Patrick Cummings

Survey Data

In October 2007, an aerial survey focused south of State Route 160 from Potosi Mountain to the southern terminus of the Spring Mountains yielded a sample of 38 bighorn sheep. The sample included 18 rams, 16 ewes and four lambs. No surveys were conducted in the Bird Spring Range or areas north of State Route 160.

Habitat

Unit 262 tends to receive more precipitation from year to year than most other areas in Clark County. Bighorn sheep generally benefit from adequate range conditions on a consistent basis; however, due to proximity to Las Vegas, recreational pursuits (e.g., OHV and mountain bike use/proliferation of roads and trails), feral horses and burros, and suburban sprawl serve to degrade habitat.

On June 22, 2005, lightning strikes in the higher elevations near Potosi Peak ignited the Goodsprings Fire. The heavy accumulation of fine fuels coupled with high winds allowed the fire to spread along ridgelines and ultimately consume 33,484 acres. The Goodsprings Fire consumed plants within three vegetative associations: Creosote-Bursage Flats, Mojave Desert Scrub, and Pinyon-Juniper Woodland along a 3,940'-elevation gradient. Landmark areas within the Goodsprings Fire included: northern portion of the Bird Springs Range; eastern portion of Cottonwood Valley, northern portion of Goodsprings Valley, eastern and southern Potosi Mountain and Shenandoah Peak. Severely and extensively burned areas with little to no remaining vegetation included: northern portion of Goodsprings Valley, Double Up Mine canyon, Cave Spring canyon and Shenandoah Peak. Areas burned that contained few small mosaics of remaining vegetation included: northern portion of the Bird Spring Range, Ninety-nine Spring canyon, and areas southwest, south and east of Shenandoah Peak. In addition, vegetation associated with approximately 3 springs and numerous wash complexes were impacted by fire.

Population Status and Trend

North of State Route 160, bighorn sheep inhabit the Red Rock and La Madre portions of the Spring Mountains. South of State Route 160, bighorn occur in lower densities throughout the Bird Spring Range, Potosi Mountain, Table Mountain, Little Devil Peak and Devil Peak.

In 2008, the desert bighorn sheep population estimate is 170-180 and approximates the estimate reported last year.

Desert bighorn sheep in the Spring Mountains face a host of challenges with respect to habitat degradation, fragmentation and loss. In the La Madre Ridge area, human encroachment in the form of suburban sprawl and OHV use has eliminated and degraded bighorn sheep habitat. Increasingly, land management

emphasis in the Red Rock area is to accommodate human recreational pursuits that are often incompatible with habitat and wildlife conservation. Future large-scale projects include upgrade of Sandy Valley Road and the impending development of a wind energy power generation plant in the Table Mountain area.

In the late 1990s, the Las Vegas District Bureau of Land Management (BLM) administratively designated a large area (approximately 3,641 acres) east of La Madre Ridge as Lone Mountain Community Pit (LMCP). The intent of the designation was to accommodate local demand for an additional source of sand and gravel to support development in Southern Nevada. However, the BLM designated LMCP without adequate evaluation of environmental impacts or review of existing documents. In the 1960s, BLM identified much of the area now within the boundary of LMCP as seasonally important for bighorn sheep. Presently, after over four years marked by strained communication between NDOW and BLM, a draft master plan for LMCP is available for public review.

Unit 263, McCullough Range and Highland Range: Southern Clark County
Report by: Patrick Cummings

Hunt Quotas and Harvest

In 2005, the overall quota was raised from 6 in the previous year to 10. Similar to recent hunt seasons, interest to hunt in Unit 263 remains high among recipients of Wildlife Heritage Tags and Partnership in Wildlife Tags.

Survey Data

In October 2007, aerial bighorn sheep surveys were conducted in the Highland Range and McCullough Range. In the Highland Range, 20 rams, 12 ewes and 7 lambs were encountered. In the northern portion of the McCullough Range, 154 sheep were classified reflecting sex and age ratios of 66 rams and 26 lambs per 100 ewes.

Habitat

Three land use actions already authorized by federal legislation or by Las Vegas District Bureau of Land Management are anticipated to impact bighorn sheep inhabiting the northern portion of the McCullough Range. To enhance recreation, the city of Henderson has advocated construction of a road and associated trails network that would extend from Anthem master-planned community eastward over the McCullough Range and link with that portion of Henderson on the east side of the range. Two other projects focused in McCullough Pass involve construction of a 20-inch diameter, buried steel natural gas pipeline, and an additional set of high-tension power lines. The Harry Allen-Mead Transmission Line Project was completed, and entailed construction of a 500-kilovolt-transmission line through the south end of the prominent ridge that extends south from Railroad Pass.

An unresolved issue centers on relocation of a segment of the local helicopter scenic tour operations from McCarran International Airport. The widely supported project is intended to direct helicopters enroute to and from the Grand Canyon to an unpopulated area. One proposal identifies a heliport south of Sloan. Under this scenario, tour helicopters departing and arriving at a heliport south of Sloan would necessarily fly over the McCullough Range. The direct routes to and from the proposed heliport would entail potentially 120-200+ low-level flights over the central portion of the McCullough Range within one mile of 2 water developments. The issue and details will be resolved through federal legislation.

Population Status and Trend

The population inhabiting the Highland Range and McCullough Range is estimated at 330 adults and reflects a modest contraction relative to last year. Based on aerial survey data, the majority of the bighorn sheep in Unit 263 remain distributed north of McCullough Pass.

In October 2006, the second capture and removal of bighorn sheep in the McCullough Range was conducted

to achieve an augmentation of the herd inhabiting the Virgin Mountains. Twenty-seven sheep comprised of 22 ewes, 2 female lambs and 3 male lambs were captured from the northeast and central portions of the range.

In October 2003, the first capture and removal of bighorn sheep in the McCullough Range was conducted to achieve an augmentation of the herd inhabiting the Delamar Mountains. Fifteen sheep comprised of 14 ewes and one male lamb were captured from the east-central portion of the range.

In an isolated incident in late July 2005, 22 bighorn sheep were found to have died in proximity to the Roy water development. An extensive investigation ensued into what caused the deaths of 11 rams, 6 ewes and 5 lambs. Dr. Dan Crowell, a veterinarian with Nevada Department of Agriculture, coordinated the investigation. Bighorn sheep tissue and water samples were submitted to California Animal Health and Food Safety Laboratories at University of California, Davis. The considered possible causes of death included: lightning, dehydration, toxic compounds and metals and disease. Diagnostic findings were inconclusive as to the cause of death of the 22 bighorn sheep. Lightning was reasoned as not a causative factor. A confounding aspect that limited the scope of testing was extreme high temperatures prior to and during the narrow timeframe within which the bighorn sheep died. The record high temperatures in late July served to hasten decomposition. The rapid decomposition of the carcasses limited the number and types of tissue samples collected. All tissue samples were autolyzed and unsuitable for bacteriology tests.

Additional critical factors that likely hampered detection of a toxin in the drinker were the dismantled float valve at the drinker and heavy rainfall that occurred the night before and early morning of the day the sheep were discovered. The inoperable float valve resulted in an open, flow-through system that when it rained the drinker was thoroughly flushed. Thus, if a toxin were present in the drinker it likely would have been eliminated through prolonged flushing action shortly after rainfall began the night prior to discovery.

Bighorn sheep in the northern portion of the McCullough Range face a variety of human imposed challenges in the near future. On the west flank of the range, suburban sprawl and flood control measures have already claimed much of the lower elevation habitat. To the north, the movement corridor between the River Mountains and the McCullough Range across US 93/95 at Railroad Pass has been effectively eliminated. Additional urban sprawl southward along I-15 is expected to degrade bighorn sheep habitat in the Hidden Valley area.

Unit 264, Newberry Mountains: Southern Clark County
Report by: Patrick Cummings

Survey Data

No survey was conducted in Unit 264 in 2007. In October 2006, an aerial survey in the Newberry Mountains yielded the highest recorded sample of 45 bighorn sheep. The sample was comprised of 22 rams, 19 ewes and 4 lambs Table 1.

Table 1. Bighorn composition obtained through aerial surveys in the Newberry Mountains.

Year	Rams	Ewes	Lambs	Total	Rams/100 Ewes/Lambs
1994	3	6	0	9	50/100/0
1996	6	11	4	21	55/100/36
1998	7	13	11	31	54/100/85
2000	12	18	5	35	67/100/28
2003	11	16	14	41	69/100/88
2006	22	19	4	45	116/100/21

Population Status and Trend

The population in the Newberry Mountains is estimated at 50-60, and approximates the estimate derived last year. Population data over the long term suggest the small herd is stable.

Unit 265, South Eldorado Mountains: Southeastern Clark County
Report by: Patrick Cummings

Seasons and Hunt Quotas

Units 264 and 265 have constituted a hunt unit group since 1998.

Survey Data

No aerial survey was conducted in 2007. In October 2003, 2 rams, 6 ewes and 4 lambs were observed during a 4.5-hour survey (Table 1). The next aerial bighorn sheep survey in the south Eldorado Mountains is scheduled for fall 2008.

Table 1. Bighorn composition obtained through aerial surveys in the south Eldorado Mountains.

Year	Rams	Ewes	Lambs	Total	Rams/100 Ewes/Lambs
1992	3	1	0	4	300/100/0
1994	1	5	3	9	20/100/60
1996	19	14	5	38	136/100/36
1998	14	3	1	18	467/100/33
2002	3	2	2	7	150/100/100
2003	2	6	4	12	33/100/67

Since 1969, survey sample sizes have varied widely; samples have ranged from 0 to 50 animals. In some years, aerial survey data portray a disproportionate number of rams in the unit. In many of the 20 aerial surveys conducted since 1969, the number of rams observed either equaled or far exceeded the number of ewes.

Population Status and Trend

The southern Eldorado Mountains support a low-density resident bighorn herd as well as a fall migrant segment from the northern portion of the range. The 2008 population estimate for the herd inhabiting the entire Eldorado Mountains (Units 265 and 266) is 180, and reflects a modest decline relative to the estimate reported last year.

Unit 266, North Eldorado Mountains: Southeastern Clark County
Report by: Patrick Cummings

Survey Data

No aerial survey was conducted in 2007. In October 2006, an aerial survey conducted in the northern portion of the Eldorado Mountains yielded a sample of 127 bighorn sheep. The observed sex and age ratios were 57 rams and 33 lambs per 100 ewes. Bighorn sheep were well distributed along the prominent east-west oriented ridge situated northeast of Boulder City and south of US 93, and were encountered in near regular intervals as the survey progressed south to Burro Wash.

Habitat

On the northern end of the Eldorado Mountains, the herd has coped not only with persistent drought conditions (2000-02 and 2006-07), but also periodic deaths consequential to collisions with vehicles along US 93. The highway traverses through a bighorn sheep core use area and likely represents a population sink. The magnitude of the problem is somewhat unclear as it is expected only a fraction of bighorn-vehicle collisions are reported.

The bighorn sheep herd in the Eldorado Mountains will face additional human imposed challenges. Two massive projects, one of which is underway, are intended to divert highway traffic from traveling along existing US 93 over Hoover Dam and through Boulder City. The Hoover Dam Bypass is nearing completion, and entails construction of a bridge that will span the Colorado River as well as a new U.S. 93 alignment. The second bypass project will extend the new US 93 alignment east of Boulder City through the northern portion and western flank of the Eldorado Mountains.

In October 2003, in efforts to better understand how the Hoover Dam Bypass project will impact bighorn sheep, the Federal Highway Administration, National Park Service and Nevada Department of Wildlife cooperated in capture of 20 bighorn sheep subsequently fitted with GPS and VHF telemetry subsystems. The near-term objective is to monitor bighorn movements and distribution before and during construction phases. Ultimately, as the project nears completion, bighorn movement and distribution data are anticipated to illuminate impacts that may be addressed and mitigated, as well as impacts that may be irreversible.

Population Status and Trend

The southern Eldorado Mountains support a low-density resident bighorn herd as well as a fall migrant segment from the northern portion of the range. The 2008 population estimate for the herd inhabiting the entire Eldorado Mountains (Units 265 and 266) is 180, and reflects a modest decline relative to the estimate reported last year.

Unit 267, Black Mountains: Eastern Clark County
Report by: Patrick Cummings

Survey Data

No aerial survey was conducted in 2007. In October 2005, an aerial survey yielded a sample of 98 bighorn sheep. The observed sex and age ratios were 33 rams and 45 lambs per 100 ewes. The observed proportion of lambs-to-ewes was last surpassed in 1988 when 316 sheep were classified during an aerial survey.

Population Status and Trend

Recruitment of young animals into the bighorn sheep herd inhabiting the Black Mountains has been below levels necessary to maintain the population. Aerial survey data (i.e., lamb-to-ewe ratio, sheep per hour, total observed) portray a steady population decline that began in the latter half of the 1980s. Although the results of the 2005 aerial survey were encouraging, more recent drought conditions in 2006-07 likely resulted in depressed production and recruitment in 2007-08.

Desert bighorn sheep occupying the Black Mountains and Muddy Mountains comprise a single population given the high degree of movement between ranges. However, environmental conditions and local population dynamics have differed markedly. Over the long term, aerial survey data portray a decline in the number of inhabiting the Black Mountains while the adjacent Muddy Mountain segment expanded.

The 2008 population estimate for the Black Mountains and Muddy Mountains is 800-850. The estimate, rather than reflecting an increase from 800 reported last year, accounts for appropriate revisions of the population model to ensure demographics remain consistent with ram harvest.

Unit 268, Muddy Mountains: Clark County
Report by: Patrick Cummings

Survey Data

In October 2007, an aerial survey in the Muddy Mountains yielded a sample of 267 bighorn sheep. The observed sex and age ratios were 87 rams and 47 lambs per 100 ewes. Bighorn sheep were encountered throughout much of the survey route, which included the east half of the Muddy Mountains and Muddy Peak.

Habitat

Overall dry conditions in 2006 and early 2007 resulted in inadequate recharge of 3 water developments in the Muddy Mountains. In a collaborative effort, critical funding support from Fraternity of the Desert Bighorn, Nevada Bighorns Unlimited—Reno Chapter and Foundation for North American Wild Sheep enabled payment for contract helicopter services. In May, July and September 2007, in the course of 186 sorties, a helicopter delivered 11,350 gallons of water to 3 water developments. Eighty-five percent of the water was delivered to the Five Ram water development.

Population Status and Trend

The Desert sheep occupying the Black Mountains and Muddy Mountains comprise a single population given the high degree of movement between ranges. However, environmental conditions and local population dynamics have differed markedly. Over the long term, aerial survey data portray an increase in the number of inhabiting the Muddy Mountains while the adjacent Black Mountains segment declined.

In December 2007, a bighorn sheep capture and removal operation was conducted in the Muddy Mountains to achieve an augmentation of the herd inhabiting the Delamar Mountains. Twenty-five sheep comprised of 22 ewes, 2 female lambs and one male lamb were captured from the eastern portion of the Muddy Mountains.

The 2008 population estimate for the Black Mountains and Muddy Mountains is 800-850. The estimate, rather than reflecting an increase from 800 reported last year, accounts for appropriate revisions of the population model to ensure demographics remain consistent with ram harvest.

Unit 271, Mormon Mountains: Lincoln County
Report by: Mike Scott

Survey Data

Aerial surveys were completed in September 2007 and resulted in the classification of 165 sheep. These consisted of 45 rams, 79 ewes, and 41 lambs which results in a ratio of 57 rams/100 ewes/52 lambs. The previous survey was conducted in September 2005, and resulted in the classification of 140 sheep consisting of 39 rams, 70 ewes, and 31 lambs for a ratio of 56 rams/ 100 ewes/44 lambs.

Habitat

Habitat conditions throughout the Mormon Mountains are fair to good due to favorable fall and spring precipitation. Recent burns are likely having mixed effects on the sheep population. While there may be increased forage in early spring, much of the burned areas have become reinvaded by exotic annual grasses which are ultimately detrimental to the sheep population by preventing shrubs used for thermal and escape cover from becoming reestablished. Additionally, these exotic grasses may allow the manifestation of the "cheatgrass or red brome fire cycle" which increases the size and frequency of wildfires in wildlife habitat never allowing the habitat to completely recover. Complicating matters is the area was declared wilderness in 2004, which means that only native shrub and grass seeds may be used in reseeding efforts. Additionally, the use of most equipment is restricted except for helicopters and airplanes which increases costs and minimizes recovery efforts.

Population Estimate, and Trend

The computer-generated population estimate is 210 animals, compared to 185 in 2007.

Unit 272, Virgin Mountains and Gold Buttes: Northeastern Clark County
Report by: Patrick Cummings

Survey Data

No aerial survey was conducted in 2007. In September 2006, an aerial survey conducted in the Virgin Mountains and Gold Buttes yielded a sample of 62 bighorn sheep. The observed sex and age ratios were 70 rams and 37 lambs per 100 ewes. Bighorn sheep were encountered in the Whitney Pocket area, Iceberg Canyon, Bitter Ridge and the north end of Lime Ridge.

Habitat

In May 2004, the Virgin #1 water development was constructed northwest of Whitney Pocket as a measure to enhance habitat prior to the bighorn sheep release (augmentation) that was accomplished in October 2005. On March 18, 2006, Virgin #2 was constructed north of Whitney Pocket.

Bighorn sheep habitat in the Hiller Mountains remains in degraded state due to an existing burro population and drought conditions. A bighorn sheep release in the Hiller Mountains was approved in Fiscal Year 1996. However, the augmentation was never accomplished due to degraded habitat conditions. More recently, the National Park Service (NPS) stated 130 burros were removed from the Gold Buttes in 2007. In a recent aerial census NPS observed 83 burros in the Gold Buttes.

In July 2006, lightning strikes ignited 4 wildland fires in the southern portion of the Virgin Mountains. The aptly named Whitney Pass Fire consumed vegetation across 230 acres on the northeast end of Whitney Ridge. The Virgin Gold Fire burned to within yards of the Virgin #2 water development before a slurry drop extinguished the fire. The Virgin Gold Fire consumed mid-elevation (Mojave Desert Scrub) and upper-elevation (piñon-juniper woodland) vegetative communities across 2,700 acres. At its northern point, the Virgin Gold Fire burned to within a half mile of the Virgin #1 water development. The Jeep Fire occurred northeast of the Virgin #1 water development in the vicinity of the Virgin Gold Fire, and consumed vegetation over 196 acres. East of the Key West Mine, the Double Nickel Fire consumed vegetation across 523 acres.

In late June 2005, lightning strikes in the Gold Buttes ignited the Fork Fire and Tramp Fire. Landmarks within the burned areas included: Tramp Ridge, Gold Butte, Mica Peak, Cedar Basin, Jumbo Peak, Jumbo Basin, Anderson Ridge, Rattlesnake Peak, Garnet Valley and the north face of Bonelli Peak. Burned over areas that included Tramp Ridge, Gold Butte, Cedar Basin and Mica Peak had few remaining small mosaics of vegetation. Areas marked by little to no remaining vegetation included Jumbo Peak, Jumbo Basin, Anderson Ridge, Rattlesnake Peak, Garnet Valley and the north face of Bonelli Peak. In addition, vegetation associated with approximately 11 springs and at least 7 wash complexes were impacted by fire. The Fork Fire consumed plants over 44,314 acres along a 3,300'-elevation gradient (2,460' to 5,760') within 3 vegetative associations: Creosote-Bursage Flats, Mojave Desert Scrub, and Pinyon-Juniper Woodland. The Tramp fire consumed vegetation over 26,817 acres.

Population Status and Trend

In recent years, few bighorn sheep are found to inhabit the Virgin Mountains; most occur in the southern portion of the unit commonly referred to as the Gold Buttes. In October 1998, 20 bighorn sheep (one ram, 12 ewes, and 7 lambs) captured in the Muddy Mountains were released north of Bonelli Peak. Based on monitoring data from 3 telemetered ewes, some bighorn sheep dispersed from the release site. Results of 4 aerial surveys conducted since 2000 suggest the 1998 augmentation did not hastened expansion of the population segment inhabiting the Gold Buttes.

In October 2005, in accordance with NDOW's biennial *Big Game Release Plan (FY 2006-07)*, 25 bighorn sheep were released at Virgin #1 water development. The release contingent was comprised of 17 ewes and 8 lambs. Eight ewes were fitted with conventional VHF radio telemetry subsystems. Shortly after the release, 4 ewes were known to have died. Three ewes succumbed to capture myopathy. The proximate cause of death of the fourth ewe was predation, although capture myopathy may have been an underlying factor. In early October 2007, a fourth telemetered ewe from the 2005 release died on a minor ridge in Mud Wash. The ewe was completely intact upon discovery, but exhibited an apparent profound infestation of psoroptic mites.

In October 2006, 27 bighorn sheep were released midway between Virgin #1 water development and Whitney Pocket. The release contingent was comprised of 22 ewes and 5 lambs. Nine ewes were fitted with conventional VHF radio telemetry subsystems. By late February 2007, 5 telemetered ewes had died. The cause of death among 3 ewes was predation, while the death of another was determined not to be the result of predation. Due to extreme difficulty in accessing the site of the remaining known mortality, no investigation into cause of death was conducted. In mid April 2007, 2 additional telemetered ewes from the 2006 release died. The causes of death were not determined.

The 2008 population estimate for the Gold Buttes and Virgin Mountains is 100-110, and approximates the estimate reported last year.

Unit 280: Spotted Range: Northwestern Clark County
Report by: Patrick Cummings

Survey Data

In September 2007, an aerial survey conducted in the Spotted Range yielded the highest recorded sample (Table 1). The observed sex and age ratios were 51 rams and 60 lambs per 100 ewes. Bighorn sheep were encountered on South Ridge near Spotted #5 water development and on the north end of the range in proximity to the 4 northern water developments.

Table 1. Bighorn composition obtained through aerial surveys in the Spotted Range

Year	Rams	Ewes	Lambs	Total	Rams/100 Ewes/Lambs
2000	18	20	10	48	90/100/50
2001	32	26	5	63	123/100/19
2002	13	18	6	37	72/100/33
2003	7	13	1	21	54/100/8
2004	11	21	11	43	52/100/52
2005	23	49	9	81	47/100/18
2006	15	40	18	73	38/100/45
2007	24	47	28	99	51/100/60

Population Status and Trend

The bighorn sheep population in Unit 280 was established through releases in 1993 and 1996. The initial release complement captured from the River Mountains, Clark County was comprised of 2 rams, 13 ewes and 10 lambs. The 1996 release contingent was also obtained from the River Mountains and consisted of 8 rams, 16 ewes and 1 lamb. In 2008, the number of bighorn sheep inhabiting the Spotted Range is estimated at nearly 100, and reflects an increase relative to the estimate (90) reported last year. Habitat improvements in the Spotted Range involve 6 water developments.

Unit 281, Pintwater Range: Northwestern Clark County
Report by: Patrick Cummings

Survey Data

In August 2007, a 4.4-hour aerial survey yielded a sample of 56 bighorn sheep. The observed sex and age ratios were 71 rams and 29 lambs per 100 ewes. Given time of year, the survey was focused over areas within proximity to water sources. Bighorn sheep were encountered within 2 miles of springs and water developments.

Population Status and Trend

In the Pintwater Range, the 2008 bighorn sheep population estimate is 140, and approximates the estimate reported last year.

Unit 282, Desert Range and Desert Hills: Northwestern Clark County
Report by: Patrick Cummings

Survey Data

In August 2007, a 4.6-hour aerial survey yielded a sample of 69 bighorn sheep. The observed sex and age ratios were 32 rams and 50 lambs per 100 ewes. The noted lamb-to-ewe ratio was among the highest on record, and surpassed the 40 lambs per 100 ewes in 2006. Given time of year, the survey was focused over areas within proximity to water sources. In the southern portion of the range, bighorn sheep were encountered within 3 miles of the 2 southernmost water developments. In the northern half of the range, the preponderance of sheep were observed near the Tommy water development.

Population Status and Trend

The 2008 bighorn sheep population estimate is 100 animals, and reflects an increase relative to the estimate (80+) derived last year. Historically, many of the bighorn sheep occupying the Desert Range were fall and winter migrants from the adjacent Sheep Range. Over the long term, the observed proportion of lambs to ewes obtained through aerial surveys has been low.

Unit 283, 284, East Desert Range and Sheep Range: Northern Clark County
Report by: Patrick Cummings

Survey Data

In August and September 2007, aerial bighorn sheep surveys were conducted on the northwest portion of Sheep Range, Enclosure Ridge, East Desert Range, Black Hills and Mule Deer Ridge. Surveys were not accomplished in 2 expansive regions of the Sheep Range, the northeast portion and southern extension.

In the course of 10 survey hours, 109 bighorn sheep were observed of which one was not classified. The observed sex and age ratios were 71 rams and 54 lambs per 100 ewes. Given time of year, bighorn distribution was expectedly clumped and associated with water sources. Bighorn sheep encountered on the Black Hills and the East Desert Range comprised 18% and 19% of the sample, respectively. The majority of bighorn observations occurred on Enclosure Ridge and on the north end of the Sheep Range near the Woody water development.

Habitat

In a 3-year period (2004-06), wildland fires sparked by lightning strikes during summer months burned vegetation along thousands of acres on the east side of the Sheep Range. In bighorn sheep habitat, fires consumed vegetation at low, mid and high elevations. Much of the fire-caused damage occurred at low elevations. Present concerns relate to the likely establishment of fire-adapted invasive and exotic annual grasses at low and mid elevations.

Population Status and Trend

The 2008 population estimate for bighorn sheep inhabiting Units 283 and 284 is 190 animals, and approximates the estimate reported last year.

In an effort to hasten recovery of the bighorn population in the Sheep Range, and in conformance with NDOW's Big Game Release Plan, 35 sheep captured in late October 1998 from the Muddy Mountains, Arrow Canyon Range, and Specter Range were released at the mouth of Joe May Canyon. Subsequent monitoring efforts and aerial survey data suggest the release was not effective in achieving the objective.

Unit 286, Las Vegas Range: Clark County
Report by: Patrick Cummings

Survey Data

No survey was conducted in Unit 286 in 2007. In October 2006, an aerial survey conducted in the Las Vegas Range yielded a sample of 56 bighorn sheep. The observed sex and age ratios were 47 rams and 18 lambs per 100 ewes. The noted lamb-to-ewe ratio was among the lowest on record. Bighorn sheep were encountered on Gass Peak, Fossil Ridge and unburned areas near water sources. Wildland fires in 2004 and 2005 consumed vegetation over extensive areas in the Las Vegas Range, and limited the scope of the survey.

Habitat

In 2004 and 2005, wildland fires sparked by lightning strikes during summer months burned vegetation along thousands of acres in the Las Vegas Range. In bighorn sheep habitat, fires consumed vegetation at low, mid and high elevations. Much of the fire-caused damage occurred at low and mid elevations. Present concerns relate to the likely establishment of fire-adapted invasive and exotic annual grasses at low and mid elevations. Members of the Fraternity of the Desert Bighorn and NDOW personnel repaired fire-caused damage to 3 water developments (Juniper Peak, Hidden Valley and Frozen Toe).

The Las Vegas Range is situated immediately north of the Las Vegas valley, and in recent years, suburban development has approached the southern boundary of the Desert National Wildlife Range. Increasingly, off-highway-vehicle (OHV) use has resulted in proliferation of unauthorized roads and trails. Despite federal regulation prohibiting the use of unlicensed vehicles on the refuge, the newly established network of roads and trails allows OHV users access to formerly undisturbed bighorn habitat.

Population Status and Trend

The 2008 population estimate for bighorn sheep inhabiting the Las Vegas Range is 120, and reflects a decrease relative to the estimate (135-140) derived last year. Fires that occurred during summer months in 2004 and 2005 impacted approximately half of the bighorn sheep habitat in the Las Vegas Range. Post-fire establishment of fire-adapted invasive and exotic annual grasses at low and mid elevations is expected. The Las Vegas Range supports a resident bighorn population, and during cooler months, a migrant segment from the Sheep Range.

CALIFORNIA BIGHORN SHEEP

Unit 011, 013, Vya Rim, Massacre Bench and Hays Canyon Range: Washoe County
Report by: Chris Hampson

Disease Event

A major disease event occurred this past summer and fall in the Hays Canyon Range of hunt Unit 013. The NDOW was first informed of the possibility of a problem when a bighorn sheep tagholder for the unit observed a sick bighorn ewe just off of the main Hays Canyon Road in early October. Just a few hours later, the ewe was found dead lying under a tree. The ewe was taken back to Reno where a thorough necropsy was performed by the staff veterinarian. The necropsy examination and resulting lab work found that the ewe had died from severe bacterial pneumonia. Both Biebersteinia (formerly Pasturella) trehalosi and a common pus-forming bacterium, Arcanobacterium, were cultured from the lesions of the lung. The ewe also showed scarring in the lungs that suggested Mycoplasma infection. NDOW and volunteers with Nevada Bighorns Unlimited immediately began ground surveys to evaluate the extent of the die-off and to attempt to collect important samples for testing. Over the next several weeks samples were collected from other dead and dying bighorn. Nevada Bighorns Unlimited then provided funding for a helicopter survey of the Hays Canyon Range. Seven live bighorn were observed in 3 hours of aerial survey that covered the entire western slope and ridge of the Hays Canyon Range. In the past, NDOW frequently observed between 50 and 70 animals during similar aerial surveys. Over the course of the next month, several of the animals observed alive during the aerial survey had died. A second aerial survey was conducted by NDOW and only 2 live bighorn were observed. Two additional bighorn carcasses were also located. A camera was set up near one of the big game guzzlers in hopes of photographing live bighorn. No pictures of bighorn were taken near the guzzler over the next the next month. Ground surveys continued into early December but no live bighorn were located. Lab results from the additional samples collected in October and November confirmed that the animals died from bacterial pneumonia. However, one interesting finding that occurred in multiple animals but not all was the detection of Pasteurella multicoda U6. This particular biotype had also been linked to other die-offs of bighorn in the Hells Canyon area of Idaho, Washington, and Oregon.

Based upon the veterinary findings and survey results, NDOW remains convinced that a major disease related event occurred in the Hays Canyon Range in 2007. It is still possible that there are bighorn that survived the disease event and still alive in the Hays Canyon Range of hunt Unit 013. Other bighorn may be in adjacent habitats within Unit 013 that were not affected by the disease related event. NDOW will continue to monitor the Hays Canyon Range situation through 2008 to try and determine the number of animals that remain.

Unit 011 bighorn subpopulations that exist to the north and northeast of the Hays Canyon Range are believed to be healthy and not affected by the disease event. Recent reports of up to 30 animals in the Coleman Canyon area of Unit 011 and reports and observations of between 10 and 15 animals on the Massacre Bench are encouraging. These subpopulations should continue to grow and help bighorn in this unit to expand into available habitat. NDOW will continue to investigate and monitor the die-off that has occurred in Unit 013 and those sub-populations that remain in Unit 011.

Population Status and Trend

The population estimate for this bighorn population has been reduced significantly to reflect the number of animals estimated to have been lost in the Hays Canyon Range. The current estimate for the 011, 013 unit group is 40 animals. The 2006 estimate was 110 animals.

Unit 012, Calico Mountains and High Rock Canyon: Western Humboldt and Washoe Counties
Report by: Chris Hampson

Survey Data

Aerial helicopter composition surveys were conducted in mid-September 2007. These surveys are conducted in conjunction with pronghorn composition surveys following the close of the pronghorn hunting season. A total of 112 bighorn were observed in Unit 012 and were classified as 42 rams, 52 ewes, and 18 lambs. The computed ratio for the sample was 81 rams/100 ewes/35 lambs. Areas covered this past survey were the Calico Mountains, McConnel Creek to Little High Rock Canyon, High Rock Canyon, Mahogany Creek, Yellow Rock Canyon and Pole Canyon.

Population Status and Trend

Competition at water sources between bighorn, horses and cattle was severe this past summer and fall due to the very dry conditions. Horses would occupy the water sources throughout the daylight hours and would not allow bighorn or other wildlife to use or get near the water. This degree of competition can impact survival and increases the amount of stress that animals have to endure during one of the most stressful periods of the year. Habitat conditions at or near many of the water sources in this hunt unit are in poor condition due to the impacts from horses and livestock. Over the past 2 year period, NDOW has photo documented the poor condition of these habitats and provided the evidence to the Bureau of Land Management. In recent years, NDOW has also sought to build big game guzzlers for bighorn and pronghorn populations in the High Rock Canyon area. The BLM denied the construction of these important water sources due to conflicts with Wilderness regulations. NDOW disagrees with this assessment. NDOW supports the reduction of horse numbers to the low end of the Appropriate Management Level (AML) to keep horses from impacting the resource and degrading wildlife habitat.

The lamb recruitment of 35 lambs per 100 ewes represents the lowest observed lamb recruitment for this herd. Poor habitat conditions and competition with feral horses and livestock for food, water, and cover are believed to be significant factors that limited lamb survival and herd growth during the past year. Evaluations of the current condition of water sources and riparian areas within the hunt unit need to continue. The Bureau of Land Management needs to address these issues and rectify them by reducing the feral horse AML to what the resource can support as well as identify where livestock are having a negative affect on wildlife and wildlife habitat. Approval of big game watering devices (guzzlers) would help to partially offset some of these impacts both in the short-term and over the many years it will take for these riparian areas and water sources to heal and recover. Gathers will be needed to control horse numbers and better livestock management will have to be implemented to reverse the current downward trend of riparian areas and water sources. The population estimate for this herd dropped slightly this year due to the poor recruitment and now stands at 185 animals.

Unit 014, Granite Range: Washoe County
Report by: Chris Hampson

Survey Data

A small amount of time was expended looking for bighorn from the December 2004 release on the southwestern portion of the Granite Range. Four rams and one ewe were observed. Most of these were observed on the very steep and rugged west slope of the range. One of the 2 collared ewes from the release was observed on top of the range approximately 2.5 miles SE of the release site. The 4 rams were aged at 2, 4, 5 and 6 years of age. Surveys on the north end of the range were canceled due to the fact that sheep hunters were observed hunting in the area at the time of the survey. Two groups of sheep were observed but were not approached.

Habitat

Drought conditions that occurred in late 2006 persisted through 2007 and resulted in reduced forage quality and decrease water availability in the Granite Range. Many water sources had reduced flows or had dried up

completely by late summer 2007. Bighorn on the south end of the Range can go up in elevation and escape some of the worst habitat conditions on the lower west slopes of the range. Habitat conditions in the highest elevations of the Granite Range were not as severe as those found at the lower elevations. Numerous water sources in the central and northern portions of the range dried up completely this past summer. Cheatgrass has invaded many of the lower elevation burns near Negro Creek and have prevented native vegetation from re-establishing.

Population Status and Trend

Due to the lack of recruitment data, the 3-year average lamb recruitment ratio was used for modeling purposes this year. In general, the herd has experienced good growth over the past few years. Observations of sheep on the north end of the range continue to increase and expand northward. Bighorn on the southern portion of the range are thought to be doing well but can be very difficult to locate due to the expansive habitat, trees and rugged terrain. Hunters reported observing rams, ewes and lambs on the southwest slope of the Granite Range during the 2007 hunting season.

Once again, both rams harvested from the Granite Range were harvested from the Negro Creek subpopulation. The 2 harvested rams were aged at 3 and 6 years of age. Boone and Crockett scores for the 2 rams were 125 and 150.5 inches. The 2 hunters expended an average of 4.5 days hunting bighorn in the unit. Sufficient older age class rams exist in the population to continue to allow for limited hunting opportunity.

The 2008 estimate for the 014 bighorn population has increased slightly to approximately 80 animals.

Unit 022, Virginia Mountains: Washoe County
Report by: Chris Hampson

Survey Data

Only minimal flight time was expended searching for bighorn in Unit 022 in 2007. Seven rams were observed that were aged at 4, 4, 4, 5, 5, 6, and 7 years of age. No ewes or lambs were observed during the 20 minutes of survey effort.

Harvest Data

The bighorn sheep hunting season was re-opened in 2007 in the Virginia Mountains of hunt Unit 022. The lone tagholder for the unit harvested a 5-year-old ram that scored 149 B&C inches. He also provided composition data for all animals that he observed on his hunt. He reportedly observed 17 rams and 20 ewes and lambs. The information gained from survey and from the tagholder confirmed that sufficient older aged class rams are present in this herd. The low density herd can be difficult to locate on survey due to the extensive tree cover and expansive habitat. Ground access is limited by private land ownership and Reservation lands.

Population Status and Trend

Twenty-two bighorn were released into Big Canyon of Unit 022 in December of 2007. This augmentation was implemented to bolster the existing bighorn population in the Virginia Mountains. The herd has had a low recruitment history and has experienced a static to downward trend over the past decade. The animals were trapped from the Montana and Double H Mountains of Humboldt County. The complement was made up of 18 ewes, 2 lambs, and 2 young rams. Five VHF and 4 satellite collars were attached to adult ewes to aid in follow-up. This allowed us to track some very interesting sheep movements following the release. One ewe died within a month of the release after traveling 20+ miles to the west. Following the release, a majority of the bighorn moved considerable distances and explored the good quality sheep habitat to the west of the Virginia Mountains. As of this writing, most sheep have returned to the area of the release site. One ewe remains on the southern portion of the Peterson Mountains and has been observed running with a herd of mule deer.

NDOW instituted a mountain lion predator control project in the Virginia Mountains beginning in January of 2008. Wildlife Services will implement and monitor the project over the next 2 year-period. This bighorn herd has historically been known to have high mortality due to mountain lion predation. The project will help the newly released sheep to become established in the area and reduce the lion pressure on the existing sheep population. As of this writing 5 lions have been removed from the area.

The current population estimate for the Unit 022 bighorn herd has increased due to the recent augmentation and now stands at approximately 80 animals. Sufficient mature rams exist in the population and an increase of 1 tag will be recommended for the 2008 hunting season.

Unit 031, Montana and Trout Creek Mountains: Humboldt County
Report By: Ed Partee

Survey Data

Surveys were conducted during late September 2007 in conjunction with pronghorn flights. A total of 164 sheep were classified during these flights yielding a ratio of 50 rams/100 ewes/45 lambs. Three different geographical areas were flown including the Double H Mountains, the Montana Mountains and the Trout Creek Mountains. Recent survey work on this population indicate that sheep have dispersed throughout most of these 3 ranges and are showing a strong increasing trend. This survey recorded the most ewes and lambs ever classified in this unit with one group of over 80 ewes and lambs observed..

Habitat

The winter and spring of 2006-07 was extremely dry with near record low precipitation levels received throughout most of northwestern Nevada. The summer of 2007 was also extremely dry with a record 90 plus days without any measurable precipitation. Water sources in this unit exhibited reduced flows or in some cases dried up completely. Lamb ratios declined slightly during this time period which may have been a reflection of these difficult conditions. Current conditions are much improved with near average precipitation received during the 2007-08 winter period.

Population Status and Trend

The current population estimate for this sheep herd is 175 animals. This is an increase over last years published estimate and reflects the strong increasing trend that this population has exhibited in recent years. Increasing sheep numbers in this unit have fostered concerns over high sheep densities and the potential of a sheep die-off precipitated by a disease or weather related event. Several trapping and removal projects have been conducted in this unit in an attempt to reduce numbers. Most recently a trapping operation was conducted in December 2007 in which 22 sheep were removed. Continued monitoring of this population will be needed to watch for density related problems and provide support for removal projects.

Unit 032, Pine Forest Range and McGee Mountain: Humboldt County
Report by: Ed Partee

Survey Data

Surveys were conducted during late September 2007 in conjunction with pronghorn flights. Three mountain ranges were surveyed in this unit which included the Pueblos, Mc Gee Mountain and the Pine Forest Range. A total of 184 animals was classified during these flights with a ratio of 53 rams/100 ewes/33 lambs. The majority of the sample came from the Pine Forest Range where sheep numbers are doing well throughout the range. Sheep were more difficult to locate on the Pueblos and Mc Gee Mountain this year and lamb ratios were definitely lower in this portion of the unit than what has been observed during past surveys.

Habitat

Dry range conditions have had a direct affect on lamb survival especially on the Mc Gee portion of this unit. Along with many of the other units in Humboldt County, the lack of moisture received during this past summer resulted in animals being concentrated on remaining water sources. Continued drought cycles may slow the growth of this population in the future.

Population Status and Trend

The 2007 population estimate for this unit is approximately 210 animals. This estimate coupled with near record numbers of animals surveyed indicates that this population has done well over the last several years and appears capable of sustaining large numbers of bighorn. New water developments on the McGee portion of this unit have opened up additional habitat for sheep to utilize. Bighorn in the Pine Forest Range have pioneered new use areas which has allowed numbers to increase.

Unit 033, Sheldon National Wildlife Refuge: Washoe and Humboldt Counties
Report by: Chris Hampson

Survey Data

Bighorn surveys are normally flown in conjunction with pronghorn composition surveys in mid September. However, bighorn surveys on the Sheldon were shortened due to the presence of bighorn sheep tagholders hunting in the area. A total of 30 sheep were classified as 6 rams, 15 ewes and 9 lambs. The sample computes to a composition ratio of 40 rams/100 ewes/60 lambs.

Harvest Data

Harvest figures from the 2007 season show that older aged class rams are available for harvest. The 5 rams harvested on the Sheldon this past year were aged at 7, 8, 9, 9, and 10 years of age. This was one of the best hunting years on record for this herd when comparing the age structure of the harvested rams. Boone and Crockett scores of the harvested rams ranged between 145 and 163.5 inches.

Habitat

Habitat conditions on the Sheldon have been very poor for the last 2 years. Competition between feral horses and bighorn and other wildlife increase significantly under these very dry conditions. Water sources throughout the Sheldon were drying up as the summer progressed and forced bighorn and other animals to move to locations with better quality forage and reliable water sources. Spring sources and lakebeds were completely dry on top of Rock Springs Table by the end of August 2007. This is an uncommon occurrence and has been observed only a few times over the past 2 decades. Forage conditions on the Sheldon were very poor this past summer even at the upper elevation habitats on the highest mountain peaks. Bitterbrush plants were observed to be really suffering and hardly received enough moisture to produce leaves. The plants were still alive but appeared to be very stressed. Moisture received this past winter should help to alleviate some of the drought related impacts.

Population Status and Trend

Harvest records from the 2007 hunting season indicate that good numbers of older aged class rams are in the population. The Sheldon bighorn population has had a stable to increasing trend in recent years. Lamb recruitment in 2007-08 appears to be strong and should allow for continued herd growth. The population model for this herd now stands at 190 animals.

Unit 034, Black Rock Range: Humboldt County
Report by: Ed Partee

Survey Data

A total of 164 sheep were classified during, late September 2007, flights yielding a ratio of 66 rams/100 ewes/47 lambs. The 164 sheep classified represents a record sample and is well above any previously observed sample of bighorn obtained from this unit. Bighorn appear to be expanding their use patterns in this range with higher numbers of sheep being located in areas that previously had low densities

Population Status and Trend

The 2008 population estimate for the Black Rock Range is approximately 190 animals. This estimate is similar to last years published estimate. Despite having an excellent survey in this unit, the competition for water and the dry summer conditions are hindering growth in this unit. With the fall of the lamb ratios the growth of this herd is has slowed. Spring moisture will be needed to give this population the jump start for the upcoming lamb crop. Ram groups are spreading out throughout the range and are now being located on both the east and west side of the range.

Hunter access has been altered by the designation of the Black Rock/High Rock Immigrant Trail National Conservation Area and Wilderness Areas (NCA). The NCA boundaries embrace the primary harvest area of Big Mountain. The BLM has marked the majority of the restricted access points and hunters who apply for this area need to understand these restrictions. Despite the access issues in this area, hunter success has been good in this unit.

Unit 035, Jackson Mountains: Humboldt County
Report by: Ed Partee

Survey Data

This survey was conducted during the latter part of September 2007 in conjunction with pronghorn flights. Because of the topographic features of this mountain it can be very difficult to survey with any amount of wind or other weather. A total of 37 animals were surveyed during these flights which yielded a ratio of 108 rams/100 ewes/77 lambs. This ratio is really skewed due to the lack of ewe/lamb groups observed. This survey once again fell below the 5 year average. Lamb ratios for this unit appear to be within the 5 year average.

Habitat

Habitat conditions for this unit have diminished significantly over the last couple of years. The dry summer months and horses numbers out of control, utilization on this range just prior to this survey flight have had a significant impact. Water sources have been over utilized making it difficult for sheep to compete. In July the BLM did a major horse roundup in this unit which should significantly improve conditions on this mountain in the next few years. Spring and summer moisture will be needed to help improve range conditions and to sustain lamb production in the coming years.

Population Status and Trend

The estimated population this year is around 150 animals. This is a reduction from what was believed to be there in the past. The last few years have seen an overestimation of the population showing the large drop in this years population estimate. The adjustment in the population reflects the last couple of year's survey along with the past 2 years of hunter observations. This unit from 1996 to 2002 may have seen a slightly higher harvest objective that may have contributed to the effects of the current population. With the decreased tag quotes over the last few years and the removal of the overabundance of horse, this population may start to bounce back provided weather and range conditions improve.

Hunter access has been influenced by the designation of the Black Rock/High Rock Immigrant Trail National Conservation Area and Wilderness Areas (NCA). The NCA boundaries embrace bighorn concentration areas of King Lear Peak and Parrot Peak. The Bureau of Land Management (BLM) has marked the majority of the restricted access points and hunters who apply for this area need to understand these restrictions.

Unit 051, Santa Rosa Range: Humboldt County
Report by: Ed Partee

Survey Data

A survey was conducted towards the end of September 2007 in this unit. A total of 60 animals were surveyed during this flight yielding a ratio of 32 rams/100 ewes/61 lambs. During this survey, the Santa Rosa Range is split into 3 different areas to be surveyed. The north end, the south end and the Hinkey Summit/Buttermilk Summit side of the range. During this survey winds were experienced adding a challenge to this survey. The animals surveyed were well distributed within the range. This unit experienced a wildland fire on the Hinkey/ Buttermilk portion of the range. Prior to the fire that occurred animals were seen utilizing this area. Post fire animals in this area were a little more difficult to locate. The north end of the range towards the Eight-mile Canyon portion usually yields good numbers of sheep. However, on this flight very few animals were located in this area after intensely surveying this section. The south end of the range yielded a good number of sheep indicating that the sheep in this area are doing well. This year's survey fell slightly below the 5 year average which may be attributed to the weather conditions involved.

Habitat

Like all the areas in Humboldt County, the summer was extremely dry resulting in poor range conditions. Flights that occurred in the spring of the year showed promise to the range until the moisture subsided in early summer. With the dry conditions, many of the drainages within this range dried by mid August leaving only small pockets of water. With the lack of water in some of these areas, sheep seemed to move from these areas which increased survey time to locate animals. Future potential still exists for further habitat fragmentation due to mining exploration. When exploration occurs in these areas displacement of sheep does occur. However, to what extent and for how long, has not been determined. At this time the snow pack on this range appears to be fairly good. However, if spring moisture is not received habitat conditions will deteriorate.

Population Status and Trend

The population estimate for this unit is approximately 20 bighorn sheep. This population is starting to show an upward trend in this unit. Lamb ratios are holding stable which should help increase this population if range conditions improve. This is the first year that we have seen a significant increase that was not due to any augmentations. The population estimate has been on the rebound ever since the die off that occurred in 2003. Since that time the population has been slowly increasing. After the release in 2006, those animals distributed throughout the entire range. All animals at this time appear to be in great condition. Hunter harvested rams were reported to be in very good condition. With good spring and summer moisture we should see this population recover to numbers prior to the die off.

Units 066, 068, Snowstorm and Sheep Creek: Western Elko and Northern Lander and Eureka Counties
Report by: Ken Gray

Harvest Results

Five tags were available in 2007 for combined Units 066 and 068 including a non-resident tag. All 5 hunters were successful in harvesting rams. Two of the rams were harvested in Unit 066 and while 3 were taken in Unit 068. The average age for the 5 rams was 5.6 years and the average B&C score was 131.

Survey Data

A total of 41 bighorns were classified in Unit 068 from the ground; yielding ratios of 43 rams/100 ewes/52 lambs. No surveys were conducted in Unit 066.

Habitat

The Kelly Creek fire burned portions of the west side of the Snowstorm Mountains in July of 2007. Most of the sheep habitat within the Snowstorm Range has burned within the past 8 years. The long-term impacts of these fires on bighorn sheep are unknown at this time.

Population Status and Trend

It is believed that both populations of sheep are stable compared to the long-term trend but are slightly lower than last year's estimate because of poor range conditions and above average snow loads.

ROCKY MOUNTAIN BIGHORN SHEEP

Unit 074, The Badlands: Elko County
Report by: Kari Huebner

Harvest Results

The single tag holder in this unit was successful in harvesting a ram during the 2007 hunting season. It was 6 years old and the largest ram ever harvested in the unit.

Survey Data

A composition survey was conducted in conjunction with spring deer flights in February 2008. A total of 27 bighorns was classified; yielding ratios of 110 rams/100 ewes/60 lambs.

Habitat

There was a small burn (Black Mountain Fire) in the southern area of the unit and a larger one (Scott Creek Fire) in the northern portion of the unit. These fires are expected to have a minimal effect on this bighorn herd.

The lack of good spring and summer moisture may have affected vegetation quality this past year. However, above average snow accumulations this past winter should make a difference this coming spring. Lamb survival is projected to increase.

Population Status and Trend

During the summer of 1999, a sick bighorn sheep appeared in the O'Neil Basin. Subsequent pathology revealed *Pasteurella* infection. A series of helicopter surveys subsequent to the discovery of the sick sheep revealed a dramatic decrease in the bighorn sheep population. For the next few years very few lambs were observed and it appeared that few, if any were recruited into the population. However, it now appears the bighorn population has recovered from the pneumonia outbreak and lamb survival is improving.

Unit 101, East Humboldt Range: Elko County
Report by: Tony Wasley

Tag Quotas and Harvest Results

In 2007, 4 sheep tags were issued for Unit 101. This was an increase of 1 tag from the previous 8 years. For specific 2007 hunting season results, please refer to Harvest Tables in the Appendix Section.

Survey Data

A survey specific to bighorn sheep was not performed in 2007. However, incidental to spring deer surveys 147 sheep were observed and classified; yielding ratios of 61 rams/100 ewes/58 lambs.

Weather and Habitat

The Rocky Mountain bighorn sheep of the East Humboldt Range should be treated to high quality forage on summer range resulting from above average snowpack received during the 2007/2008 winter. These sheep live amongst the higher elevations and steeper slopes in the mountains. Fortunately, even in drier years, snow banks accumulate throughout the winter and sustain the high mountain meadows on which bighorn sheep depend for most of the hot and dry summer months. The slightly above normal snowpack in 2007/2008 should help to provide more than adequate habitat conditions to support bighorn sheep. As long as moderate winters persist and sufficient snowfall occurs in the upper elevations, the sheep should continue to thrive.

Population Status and Trend

The bighorn sheep population in the East Humboldt Range continues to do well as indicated by a 12 percent increase in the 2008 population estimate. Sheep were first released in the winter of 1992 and each year they appear to learn more about the available habitats and resources in the East Humboldt Range. It is expected that the herd will continue to adopt traditional summer and winter use patterns and migrations over time. Despite last year's low lamb recruitment, a good number of lambs was observed in 2008 and a healthy distribution of age classes exists, with numerous high quality rams. Recently, interest in domestic goats for meat production and weed control has grown considerably. As the number of domestic goats increases in this area, so does the potential risk of disease. Hunters who encounter estray domestic goats or observe any abnormal animal behavior, are encouraged to notify the Department of Wildlife and the Department Agriculture.

Unit 102, Ruby Mountains: Elko County
Report by: Tony Wasley

Tag Quotas and Harvest Results

Three tags were issued in 2007, up one tag from the 2 tags issued for this hunt in 2006. 2003 was the first year tags were issued for this hunt since 1996. The 1996 tag was only the second tag issued. The first tag was issued in 1995. Unfortunately, this herd experienced a catastrophic die-off during 1996-1997 and has been rebuilding ever since. For specific 2007 hunting season results, please refer to Harvest Tables in the Appendix Section.

Survey Data

A survey specific to bighorn sheep was not performed in 2007. However, incidental to spring deer surveys 71 sheep were observed and classified; yielding ratios of 45 rams/100 ewes/42 lambs. The population has rebuilt itself well and has distributed itself throughout the Ruby Mountains capitalizing on excellent summer ranges and historic winter ranges.

Weather and Habitat

The sheep live amongst the higher elevations and steeper slopes in the mountains. Fortunately, snow banks accumulate throughout the winter and sustain the high mountain meadows and riparian areas on which bighorn sheep depend for most of the hot and dry summer months. The above average snow pack received in 2007/2008 should provide high quality forage throughout the summer range of these magnificent animals. These sheep have recovered nicely and have reacquainted themselves with their previously used winter ranges that provide them with excellent green-up in the spring. As long as moderate winters persist and sufficient snowfall occurs in the upper elevations, the sheep should continue to thrive.

Population Status and Trend

The bighorn sheep population in the Rubies has recovered very well and shows a 13 percent increase in the population estimate over last year's estimate. It is expected that the herd will continue to recover and hopefully exceed pre-die-off numbers. The population is well distributed on both winter ranges and summer ranges and, barring a second catastrophic event, should continue to provide unique viewing and hunting opportunities to those visiting the Ruby Mountains. Recently, however, interest in domestic goats for meat production and weed control has grown considerably. As the number of domestic goats increases in this area, so does the potential risk of disease. Hunters who encounter estray domestic goats or observe any abnormal animal behavior, are encouraged to notify the Department of Wildlife and the Department Agriculture.

Unit 114, North Snake Range – Mount Moriah: Eastern White Pine County
Report by: Curt Baughman

Harvest Results

In 2007, the first sheep tag was offered for Unit 114 since 1991. One 7-year-old ram was harvested.

Survey Data

A 2-day herd composition survey was conducted from the ground in January 2008. Telemetry gear was used to locate individual radio-marked ewes and the groups they accompanied. Thirty-six bighorn were classified as 13 rams, 19 ewes and 4 lambs; yielding ratios of 68 rams/100 ewes/21 lambs. Eight marked bighorn were observed including 5 radio-marked ewes, 1 ewe with only ear-tags and 2, 2-year-old rams with ear-tags. Signals were received from 5 additional radio marked ewes, however they could not be directly observed due to their locations at higher elevations.

Habitat conditions suffered a downward trend in 2007. From August 2006 through the end of 2007, precipitation recorded at Ely by the National Weather Service totaled 62% of average. Precipitation monitoring equipment at higher elevations also measured below-average levels. Combined with above-average temperatures during the summer of 2007, this resulted in limited plant growth and early maturation/ desiccation of bighorn forage resources. Observations of habitat conditions on the Mt. Moriah Table (11,000' elevation) in July revealed a plant community that was already in the process of drying out. In addition to declining nutritional values, high mountain habitats also experienced reduced water quantity and distribution. Snowbanks melted earlier than normal with negative consequences for high elevation seeps, springs and riparian areas. Forage resources on lower elevation winter ranges were also impacted. As of early April 2008, 53% of normal moisture has been received at Ely so far in 2008. Habitat conditions may not improve without significant additions of spring precipitation. Longer term habitat limitations are related to the dense band of mixed conifer and mountain mahogany that effectively separates seasonal ranges in much of the area presently occupied by bighorn. This has been illustrated by GPS and radio-marked bighorn that appear to transition rapidly from high elevation summer range to low elevation winter range in October. Habitat connectivity could be improved and transitional range created through the use of prescribed fire if wilderness status was not a limitation.

Population Status and Trend

Telemetry surveys of released bighorn were conducted several times during 2007. Only 1 mortality of a radio-marked ewe was documented during this period. During the January 2007 survey, 23 out of a possible 26 marked bighorn from the January 2006 release were observed alive. In April 2007, 19 of a possible 26 released bighorn were documented alive, either by transmitter signals or identification of ear tag numbers during a routine ground telemetry survey. Over the 2+ years since the last release of 30 bighorn sheep from the East Humboldt Range in Elko County, 5 mortalities have been confirmed out of the original 21 radio-marked bighorn. This translates to favorable survival rates. The low lamb recruitment observed during the 2008 survey was likely insufficient to maintain the population. Population modeling indicates a slight decrease in the population compared to 2007. The number of mature rams in the population remains sufficient to support continued harvest.

MOUNTAIN GOAT

Unit 101, East Humboldt Mountains: Elko County
Unit 102, Ruby Mountains: Elko County
Unit 103, South Ruby Mountains: Elko and White Pine Counties
Report by: Tony Wasley

Tag Quotas and Harvest Results

Goat tags have increased from 11 in 1999 to 29 in 2007. Success continued to be good (100 percent in 2007) and most hunters reported seeing many goats and numerous billies. For specific 2007 hunting season results, please refer to Harvest Tables in the Appendix Section.

Survey Data

Incidental to deer surveys, helicopter surveys were conducted in March 2008. No goats were observed in unit 101, 8 goats were observed in Unit 102; yielding a ratio of 33 young/100 adults and 24 goats were observed in unit 103; yielding a ratio of 26/100.

Weather and Habitat

Goats live amongst the highest, rockiest, and steepest slopes in the mountains. Fortunately, snow banks accumulate throughout the winter and sustain preferred forage for goats during most of the hot and dry summer months. Even in the dry years with little precipitation, sufficient snow usually falls in the high country to facilitate goat survival. The above average snowfall that occurred in all of these units during the 2007/2008 winter should provide the goats with additional high quality forage on summer range, as the snow banks on which they depend should persist through the summer. The goats in Nevada, like most goat populations, are more limited by winter range and heavy spring snow loads that cover their forage, limit their movements, or increase their chances of fatalities from falls and avalanches. As long as moderate winters persist and sufficient snowfall occurs in the upper elevations, the goats should remain at stable levels.

Population Status and Trend

Goat populations are exhibiting a stable trend in all 3 units. According to hunter reports, biologist observations, and aerial surveys, goats appear to be doing very well. Recently, interest in domestic goats for meat production and weed control has grown considerably. As the number of domestic goats increases in this area, so does the potential risk of disease. Hunters who encounter estray domestic goats or observe any abnormal animal behavior in wild goats, are encouraged to notify the Department of Wildlife and the Department Agriculture. Other than the increased risk of disease, there are no apparent reasons why we should not continue to enjoy the increased opportunity that this unique trophy species offers.

MOUNTAIN LION

Western Region-Areas 1 – 5, 18, 19, 20 & 29
Report by: Carl Lackey

Harvest Results

Analyzing all data available for this report period, biologists have recorded 90 mountain lion mortalities for the Western Region (Table 2). This includes 57 animals taken under valid sport tags and 27 by USDA - Wildlife Services. Both the sport harvest and the Wildlife Services take were elevated relative to 2007. For sport harvest, the take is on par with that of 2001. For Wildlife Services, elevated take was a function of predation management projects in the Region. The 27 lions killed under predation management projects and depredation permits is the highest on record for the Western Region (Table 2). Other mortalities included accidental trapping and collisions with vehicles.

Table 1. Western Region mountain lion sport harvest by unit groups for 2007-08 and the previous 5 years.

Unit Group	2002-03	2003-04	2004-05	2005-06	2006-07	**Average**	**2007-08**
011-015	7	15	6	5	12	**9**	**19**
021-022	4	5	0	4	1	**2.8**	**1**
031,32,34,35	3	4	2	3	4	**3.2**	**5**
041-045	8	5	2	5	9	**5.8**	**5**
051	11	9	12	6	5	**8.6**	**11**
181-184	3	0	0	0	1	**0.8**	**2**
192,194-196	3	5	6	5	11	**6**	**5**
201-206	3	3	3	6	8	**4.6**	**8**
291	0	3	1	2	0	**1.2**	**1**
Totals	42	59	32	36	51	**44**	**57**

Table 2. Western Region mountain lion harvest objectives and mortalities by type for 2007-2008.

Unit Group	Harvest Objective	Harvest Type			
		Sport	Depredation	Other	Total
011-015	Regional 114	19	12	0	31
021-022		1	5	0	6
031,32,34,35		5	4	0	9
041-045		5	1	0	6
051		11	0	1	12
181-184		2	0	0	2
192,194-196		5	0	2	7
201-206		8	6	3	17
291		1	0	0	1
Totals	**114**	**57**	**27**	**6**	**90**

Sport Harvest

The sport harvest consisted of 33 male lions and 24 females, with average ages of 3.8 and 3.1 years, respectively (Table 3). Although there are some yearly fluctuations within harvest categories, the average ages and ratio or males/females killed has not changed significantly over past years. Most lions killed in the sport hunt are of dispersal age (Table 4) reflecting the increased chances of hunters encountering lions in this age class. It may also indicate less selectivity by hunters and their willingness to kill younger lions, and

fewer lions in the population that are in the older age classes.

Guided hunters comprised about one-third of all sport hunters. Lions killed by these hunters averaged 3.3 years of age. Nevada residents took 37 of the lions through the sport harvest, while non-resident hunters killed 20. Time spent by hunters actively hunting lions is measured by the number of days hunted. The average was 2.1 days/hunter. Hunters that use hounds to track and tree a lion typically take most lions. Some tag sales are due to hunters who are pursuing other types of game hoping to make an incidental kill of a cougar. This type of incidental harvest is infrequent, and only two lions were taken by hunters in this category in 2007. Most of the cougars killed under authority of a sport tag were taken from December through January when winter conditions favor hound hunting. Only two sport lions were killed during mid-season and it appears that the year-around season has had little effect on total sport harvest.

Table 3. Western Region mountain lion sport harvest - sex & age comparisons since 1997.

Season/Year	Harvest		Average Age		
	# Males	# Females	Males	Females	All Lions
1998-1999	24	18	3.6	3.3	3.5
1999-2000	22	16	4.2	4.4	4.3
2000-2001	39	26	4.5	4.2	4.4
2001-2002	27	18	3.8	3.5	3.8
2002-2003	20	20	4.2	2.8	3.7
2003-2004	18	30	4.1	3.5	4.0
2004-2005	22	11	4.5	3.2	4.1
2005-2006	15	21	3.7	2.6	3.1
2006-2007	25	26	3.7	3.3	3.5
2007-2008	33	24	3.8	3.1	3.4

(note: two unknown sex mortalities in 08)

Table 4. Western Region mountain lion sport harvest – age cohorts.

Sex	Age unknown	Kittens .5 - 1.5 yrs	Dispersal 2 – 4 years	Prime Adults 5 – 7 yrs	Older Adults 8 yrs +
Female	0	0	19	4	1
Male	0	0	26	7	0

Depredation Harvest

The United States Department of Agriculture's Wildlife Services personnel killed 27 lions with a sex ratio of 10 males & 16 females plus 1 of unknown sex. The average age of these lions was 3.8 and 2.6 years respectively. Thirteen of these were killed under agreement with Wildlife Services and were taken in response to domestic livestock depredation in which a total of 74 sheep valued at $100 each were reportedly killed by lions. Two were taken prior to any depredation occurring. The remaining 12 lions taken by Wildlife Services were killed under contract to NDOW on predation management projects.

All salvageable lion hides from around the state are skinned, dried and sent to the Western Region where they are then sold at the Nevada Trapper's Association's annual fur sale in Fallon. A total of 29 hides were sold this year bringing an average price of $221 with a high of $350.

Table 5. Ten-year Western Region mountain lion harvest trend–all known mortalities.

Season Year	Season Length	Harvest Objectives	Harvest Type			
			Sport	Depredation	Other	Total
1998-1999	212	88	30	10	2	42
1999-2000	213	90	30	5	3	38
2000-2001	272	86	57	7	1	65
2001-2002	365	100	39	6	2	47
2002-2003	212	114	40	5	3	48
2003-2004	365	114	48	15	3	66
2004-2005		114	33	6	8	47
2005-2006		114	36	10	6	52
2006-2007		114	51	6	8	65
2007-2008		114	57	27	6	90

There is nothing in the current harvest data to suggest the lion population is either increasing or decreasing. For this reason, regulations and quotas should remain static until such time that the supporting science indicates a change is required either direction. Discussions with trappers and hunters indicate a slightly higher interest in pursuing cougars under sport tag regulations but this may be due to decreased opportunity for mule deer tags.

When considering 10-year averages in the Western Region, there has been a notable increase in total harvest over the last two decades. For instance, the 10-year average for the period 1989-1998 was 33 lions while the average for 1999-2008 was 56 lions, a rise of 70%. The increase in total harvest may be a result of several influences including: changes in regulations; changes in management techniques in neighboring states; the implementation of predation management projects; and a higher interest in lion hunting overall. Because harvest fluctuates widely year to year it is likely that different factors are affecting harvest in different years, i.e. the 12 cougars killed this year on predator projects accounted for 13% of total harvest whereas for the 2006-07 season there were no lions killed under this category.

Reports from guides and long-time lion hunters, as well as biologist observations and harvest reports indicate that northwestern Nevada's mountain lion population is maintaining stable levels in line with the prey base. Experienced hounds men and guides seem to agree that there are fewer lions occupying the western portion of the Region. In areas where several older age-class lions have been taken out in past years there has been a noted increase in the number of younger lions killed more recently, a phenomenon not new to managers. Cougar harvest varies widely in Nevada and it will likely continue to do so. Careful monitoring of the total harvest and continued research should ensure that lion populations remain in line with the prey base. In the future, potentially setting lion quotas by geographic area rather than Regional boundaries could more effectively address immigration and dispersal among separate lion populations.

Eastern Region-Units 061-068, 071-079, 081, 101-108, 111-115, 121, 131-134, 141-145, 151-155
Report By: Russell Woolstenhulme

Harvest Results

The Eastern Region mountain lion harvest objective for the 2007-08 season was 167 lions. Four of those lions were allocated to Game Management Unit 091 (Pilot Peak) which exists as an interstate cooperative hunt with the State of Utah. The remaining objective of 163 was allocated to the remaining hunt units, which make up the Eastern Region. No area closures took place in 2007-08.

Eastern Region sport harvest for mountain lions for the 2007-08 season was 55 animals (Table 2). The sport harvest for the previous year (2006-07) was 56. The 2007-08 sport harvest composition was 31 males and 24 females for a ratio of 1.3 males/female. The ratio for the 2006-07 season was 2.1. The average sport harvest for the previous five years (2003-2007) was 71 lions. Average sport harvest reported during those same five years averaged 43 males and 29 females for a ratio of 1.5 males/female.

Table 1. Eastern Region sport harvest by unit groups for 2006-07 and previous 5 years.

Unit Group	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
066	0	0	0	2	0	3
061-068	14	22	6	10	4	6
065	3	3	0	0	2	3
071-081	17	45	14	17	11	8
091	0	0	0	1	1	0
101,105,106,107	2	7	5	3	1	6
102,103,104,108	7	11	9	5	7	1
111/112	6	12	10	8	7	8
113,114,115	1	5	3	4	5	3
121	5	1	2	5	7	1
131-134	3	2	2	0	0	2
141	0	1	0	0	1	1
142-145	4	5	5	2	7	7
151,152,154,155	4	1	3	2	3	6
Total	**66**	**115**	**59**	**59**	**56**	**55**

The total documented mountain lion harvest for the Eastern Region in 2007-08, including all known causes of take was 65 lions, with a total of 37 males and 28 females being removed from the population.

Regional depredation complaints in 2007-08 resulted in the removal of 10 lions compared to 12 in 2006-07 (Table 2). Two of these lions were removed for the Department of Wildlife's Predator Management program, which has an ongoing deer and elk project in Game Management Units 101, 105 and 107 of Elko County. Depredation harvest for the previous five years (2002-2007) averaged 9 lions per year.

Table 2. All Eastern Region mountain lion harvest objectives and mortalities by type/distribution for 2007-2008

Unit Group	Harvest Objective	Sport Harvest	Depredation Harvest	Other Harvest	Total Harvest
066	*Regional*	3	0	0	3
061-068	*Regional*	6	0	0	6
065	*Regional*	3	0	0	3
071-081	*Regional*	8	0	0	8
091	4	0	0	0	0
101,105,106,107	*Regional*	6	3	0	9
102,103,104,108	*Regional*	1	3	0	4
111/112	*Regional*	8	0	0	8
113,114,115	*Regional*	3	0	0	3
121	*Regional*	1	1	0	2
131-134	*Regional*	2	2	0	4
141	*Regional*	1	0	0	1
142-145	*Regional*	7	1	0	8
151,152,154,155	*Regional*	6	0	0	6
Totals	**167**	**55**	**10**	**0**	**65**

Population Trend

Mountain lion habitat remains in good condition throughout the Eastern Region with an ample prey base and minimal overall loss of habitat due to development activities. Range fires during previous summers converted thousands of acres of deer habitat to vegetation dominated by grasses and annuals in the Eastern Region. Some important deer summer ranges and some key deer winter ranges burned. The future status and trend of deer herds in the burned areas will have the most significant impact on lion productivity and survivability. Documented mortality in the form of harvest and accidental loss has not exceeded the reproductive/recruitment capabilities of the mountain lion resource. The harvest objective for the Eastern Region has not been met in many years.

Lion harvest has been under close scrutiny by sportsmen over the last few years. There is some concern over the quantity and quality of lions within the Eastern Region. A review of statistics within the region indicates that although some members of the sporting public may witness a locally reduced population (e.g., they are seeing fewer lions in their favorite canyon or hunting location), regionally the population is holding up well. Lion populations can not be monitored by a yearly total of lions harvested. Too many factors such as weather conditions, level of interest, etcetera, effect yearly hunting pressure and effort. A more reasonable measure of lion populations is age of harvested animals. Age and sex structure is a good measure of lion populations as over-harvest will result in age structure changes. (e.g., number of mature males harvested will drop while number of adult females and sub-adult males increase).

The average age of lions taken by sport hunters in the Eastern Region was 3.8 (Table 3) and has varied little in the past ten years (10 year average age 4.1 years). The average age of all recorded lion mortalities was 3.9 and includes sport harvest, depredation harvest and other mortalities. The overall sex ratio was 1.3 males/female compared to 2.1 males/female last year. Based on population estimates, sex and age ratios in the harvest, long-term harvest data analysis, and recorded mortality, the overall Eastern Region mountain lion population trend is considered to be stable (Tables 3 and 4).

Table 3. Eastern Region sport harvest - sex and age comparisons since 1997.

Season Year	# Males Harvested	# Females Harvested	Average Age Males	Average Age Females	Average Age All Lions
1997-98	71	57	4.1	4.6	4.3
1998-99	51	28	3.8	4.2	4.0
1999-2000	40	21	3.9	3.9	3.9
2000-01	53	47	4.4	4.5	4.5
2001-02	60	38	4.3	4.1	4.3
2002-03	44	22	4.3	4.9	4.5
2003-04	61	54	4.6	4.2	4.4
2004-05	37	22	4.3	3.9	4.1
2005-06	37	22	3.8	3.7	3.8
2006-07	38	18	4.2	3.4	3.9
2007-2008	37	28	3.8	3.8	3.8

Table 4. Ten year Eastern Region mountain lion harvest trend – all known mortalities.

Season Year	Season Length	Harvest Objectives	Sport Harvest	Depredation Harvest	Other Harvest	Total Harvest
1998-99	212	145	79	19	2	100
1999-2000	213	137	61	10	3	74
2000-01	272	137	100	17	1	118
2001-02	365	150	98	7	3	108
2002-03	212	167	66	6	3	75
2003-04	365	167	115	9	0	124
2004-05	365	167	59	10	7	76
2005-06	365	167	59	6	5	70
2006-07	365	167	56	12	6	74
2007-08	**365**	**167**	**55**	**10**	**0**	**65**
Averages	310	157	75	11	3	88

Management Conclusions

Hunter interest and participation remained high in the Eastern Region. As usual, the majority of lions were taken in December, January and February. Snow and tracking conditions were good in many areas of the Eastern Region during the 2007-08 season. Access into many popular lion hunting areas became the limiting factor as snow depth was prohibitive for much of the winter. The sport harvest objective for the Eastern Region was 167 lions and sport hunters took 55. None of the management unit groups reached sport harvest objectives. A remaining harvest objective of 112 lions was available to hunters in the Eastern Region.

Population trends appear to be stable in the Eastern Region. The population in some areas may be locally depressed. There are sufficient base populations of lions to allow for adequate reproduction and population maintenance. The dispersal of lions from adjacent mountain ranges with little or no harvest mortality moderate the effects of harvest in more popular areas. The base populations of prey species on which mountain lions depend most heavily (deer) are currently at levels expected to continue to sustain lion populations. However, deer populations are currently experiencing a short-term decreasing trend in the Region.

Southern Region – Areas 16, 17, 21-27: Esmeralda, Nye, Lincoln, and Clark Counties
Report by: Mike Scott

Harvest Results

The 2007-2008 mountain lion season ran from March 1, 2007 through February 29, 2008 in all areas of the Southern Region, with the exception of Area 28, which remains closed to mountain lion hunting. The harvest objectives in all areas were combined to form a regional harvest objective of 68 lions. Table 1 displays a comparison of sport harvest for the last 8 years. Table 2 displays the regional lion harvest for the March 1, 2007 – February 29, 2008 season.

Table 1. Comparison of Southern Region sport harvest by unit groups for the last 8 years

Unit Group	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
161-164	2	1	0	6	0	4	5	6
171-173	12	9	5	7	3	7	10	10
211-212	1	0	0	0	0	0	2	1
221-223	7	5	4	7	5	4	1	6
231	6	7	6	4	0	5	1	1
241-245	7	3	3	2	2	3	4	5
251-253	1	0	0	0	0	0	0	1
261-268	3	1	2	3	3	0	2	4
271-272	0	0	0	0	0	0	2	0
Totals:	**39**	**26**	**20**	**29**	**13**	**23**	**27**	**34**

Table 2. All Southern Region mountain lion harvest objectives and mortalities by type/ distribution for 2007-2008

Unit Group	Harvest Objective	Sport Harvest	Depredation Harvest	Other Harvest	**Total Harvest**
161-164	*Regional*	6	0		**6**
171-173	*Regional*	10	0		**10**
211-212	*Regional*	0	0	1	**1**
221-223	*Regional*	6	0		**6**
231	*Regional*	1	0		**1**
241-245	*Regional*	5	0		**5**
251-253	*Regional*	1	0		**1**
261-268	*Regional*	3	0	1	**4**
271-272	*Regional*	0	0		**0**
Totals	**68**	**32**	**0**	**2**	**34**

Regional sport harvest for the 2007-2008 season consisted of 32 lions compared to 27 lions taken during the 2006-2007 season. Of the total sport harvest of 32 lions, residents took a total of 23. Two other lions were taken by other means than legal harvest during the 2007-2008 season. No depredation complaints occurred in the Southern Region during the reporting period. Regional depredation complaints have averaged 2.6 per year (range 0 to 9) during the last ten seasons (1998-2008).

Population Trend

The 2007-2008 Southern Region mountain lion harvest consisted of 19 males and 15 females for a male to female ratio of 1.3. The five-year average is 1.2 males per female. The average age of lions taken during the 2007-2008 season averaged 4.8 years for males (compared to 4.1 in 2006-2007), and 4.6 years for females (compared to 4.0 in 2006-2007). Number of lions taken, average age, and male to female ratio all increased compared to the previous year. The total harvest of 34 lions is slightly below the average of 34.5 over the last 15 seasons (1993-2008). The Southern Region combined harvest was well below the 2007-08 objective of 68.

Table 3. Southern Region sport harvest – sex and age comparisons since 1997.

Season/Year	Harvest		Average Age		
	# Males	# Females	Males	Females	All Lions
1997-1998	27	20	4.2	4.1	4.1
1998-1999	19	15	4.6	4.9	4.7
1999-2000	20	15	4.5	4.2	4.4
2000-2001	23	17	5.4	4.8	5.1
2001-2002	13	13	4.7	2.8	3.8
2002-2003	12	8	4.6	4.5	4.6
2003-2004	18	11	4.2	4.9	4.4
2004-2005	6	7	5.9	3.6	4.7
2005-2006	15	8	4.7	3.4	4.3
2006-2007	14	16	4.1	4.0	4.05
2007-2008	18	14	4.8	4.6	4.7

Table 4. Ten year Southern Region mountain lion harvest trend – all known mortalities

Season Year	Season Length	Harvest Objectives	Harvest Type			
			Sport	Depredation	Other	**Total**
1998-1999	212	80	35	1	0	**36**
1999-2000	213	60	36	1	0	**37**
2000-2001	272	67	39	2	0	**41**
2001-2002	365	67	26	9	0	**35**
2002-2003	212	68	20	1	0	**21**
2003-2004	365	68	29	8	3	**37**
2004-2005	365	68	13	0	0	**13**
2005-2006	365	68	21	2	0	**23**
2006-2007	365	68	27	2	1	**30**
2007-2008	365	68	32	0	2	**34**
Averages:	**309.9**	**68.2**	**27.8**	**2.6**	**0.6**	**30.7**

Management Conclusions

Mountain lion harvest has shown modest increases over the last few years which may be a result of increased prey availability. Drier-than-average habitat conditions that currently exist throughout much of the Southern Region may result in lower availability of prey, as recruitment of big game populations is very low, and as small game populations fall to lower-than-average numbers. While the lion harvest was well distributed throughout the Southern Region, harvest numbers are slightly higher than the previous year. While big game populations may see decreases due to drought conditions and low recruitment, the increasing trend in the harvest indicates that the mountain lion population in the Southern Region is stable to increasing.

BLACK BEAR

Western Region
Report by: Carl Lackey

Harvest

The black bear is classified as a game animal in Nevada; however, the state does not currently support a hunting season for this species.

Bear Management in Western Nevada

This status report contains information for the calendar year 2007. This work is focused principally within Management Area 19 along the Carson Front. In 1998 the Department created a program and procedure that addressed the handling of all human/bear conflicts. This document essentially discontinued the relocation of nuisance bears. Under this program and procedure document NDOW personnel have responded to bear complaints in the same manner over the last decade. Consistent with conflict policies in other western states NDOW does not usually set traps unless the human-caused attractant has been removed or exclusionary precautions have been taken. Specific data on all captured black bears was first recorded in 1997 with a sample size of 5 individuals. Subsequent yearly captures are depicted as follows in Table 1.

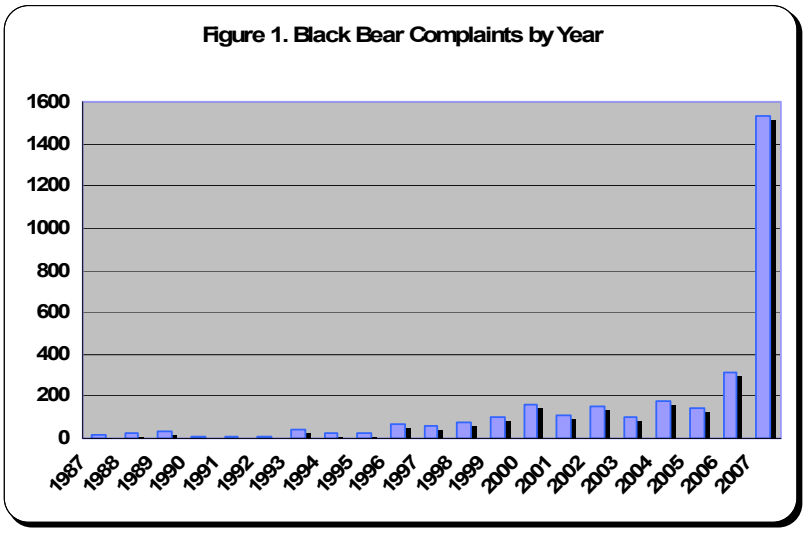
Table 1. Bears captured in the Western Region since 1997.

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	**2007**	Total
5	17	28	22	35	44	43	69	77	89	**157**	586

The data includes recaptured bears previously handled and marked in the same or preceding years.

In response to the sudden increase in complaints in 2007 NDOW acquired emergency funding in late summer and as a result hired two additional temporary employees – a dispatcher and a wildlife biologist. Both were hired through the first part of November. Additionally, NDOW revised the Black Bear Policy & Procedure document in an attempt to tighten up the response to bear/human conflict complaints.

There has been a remarkable and steady increase of bear complaints in Nevada since the late 1980's (Figure 1). This is due in part to an increase in the human population as Nevada has been the fastest growing state in the U.S. for over 15 years and much of this has taken place in western Nevada. This human incursion comes in two forms: construction of homes and infrastructure within formerly pristine habitat and an increase in human recreation activities. Both examples will produce a higher number of sightings and thus an increased number of complaints. Due to the lack of resources in their natural habitat bears were forced further into the urban areas for food and water. 10-15 years ago these urban areas did not extend as far into the optimal bear habitat as they do today and because of this there was a much smaller chance of having a bear/human conflict.



Some public perceive that increased sightings indicate an increase in the bear population, however past studies have shown this not to be the case. With a slow rate of reproductive potential black bears do not

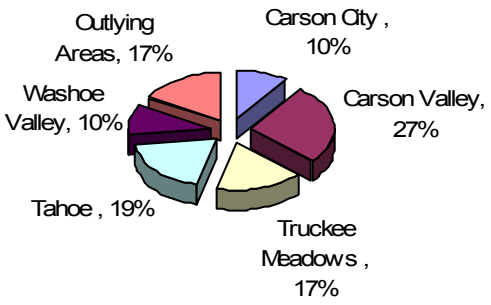
have the ability to significantly increase their population in such a short amount of time. Rather, bear populations have been redistributed across the landscape with increased densities (number of bears/100 km²) along and within the urban interface where there remains a year-round source of food. During this same time period bear densities in undeveloped habitat are thought to have decreased in the long term.

Conflicts & Captures

Bear complaints increased sharply in 2007 and were the highest number ever recorded, both in total number of complaints and man-hours spent. NDOW personnel handled 1531 complaints compared to 350 in 2006, consuming 1,197 hours (150 man-days) of personnel time and the expenditure of over 15,652 miles. A very mild winter which left very little in the way of snowpack followed by a hot, dry spring and summer are the main reasons for the increase. Wildlife dispatch dealt with 75% of all complaints (1153) by giving advice over the phone without having to forward the call to a biologist. Of the 378 calls sent to field personnel 80% (900 hours) were handled by the game biologist and the temporary biologist. A combination of law enforcement personnel handled 16% (188 hours). Seasonal and temporary employees dealt with the remaining 4%. Department personnel were summoned on after hour call-outs 77 times on bear complaint issues ranging from bears in homes to retrieving road kills.

Of the 1,531 total complaints, hundreds were reports of bears getting into garbage only. Following the *Black Bear Program and Procedure*, the usual course of action in these instances is to offer advice on reducing bear conflicts, including proper storage and disposal of garbage. In most cases offering advice by referring to the NDOW web site was the only action taken. Other common complaints were bears breaking into garbage enclosures or sheds, damage to fruit trees, bears breaking into homes and vehicles and bears frequenting an area. All of these are directly related to the garbage situation, which historically accounts for >95% of the total number of calls received.

Figure 2. Distribution of bear complaints by location.



Although prevailing climatic conditions have an affect upon bear foraging intensity, bear nuisance complaints predominantly occur in the late summer (55%) and early fall (37%) when bears are in the hyperphagia phase. The location of origin for bear complaints changed for the first time in 10 years and these calls were more evenly distributed throughout the region than in past years (Figure 2). More calls originated in Carson Valley (27%) than the Lake Tahoe basin (19%) which usually accounts for greater than 50% of the complaints. Reno, Carson City and Washoe Valley were all responsible for about 10-15% each. Reported damage this year reached $10,800, mostly attributed to bears breaking screens or tearing molding off of windows although damage to vehicles and hot tubs was also reported. Actual damage is likely much higher given that many people do not report these incidences. Depredations on livestock and agriculture resulted in the reported loss of $5360. These included incidences of bears killing sheep, one llama and damage to bee hives.

Table 2. Number sampled, age cohort and sex of all new bears for past 10 years / with average age for adults.

Age cohort	Sex	1998	1999	2000	2001	2002	2003	2004	2005	2006	**2007**
Cubs ≤ 12mo.	♂	1	3	3	2	2	4	8	7	9	**12**
	♀	1	2	1	2	5	4	8	3	4	**17**
Sub-adults 1 – 3 yrs	♂	6	6	7	8	4	4	7	9	8	**25**
	♀	1	1	2	2	3	5	1	5	6	**11**
Adults 4+ yrs / Avg. Age	♂	10 @ 10.0	5 @ 6.0	12 @ 9.2	5 @ 6.4	6 @ 8.2	3 @ 7.0	2 @ 7.5	2 @ 6.5	17 @ 6.2	**21 @ 7.6 yrs**
	♀	6 @ 9.8	7 @ 10.0	5 @ 7.8	5 @ 7.8	8 @ 9.4	2 @ 7.5	6 @ 6.5	2 @ 11.0	5 @ 7.8	**23 @ 8.9 yrs**

135 individual bears, including recaptures, were handled a total of approximately 157 times. These included 21 adult males and 23 adult females. Of the 135, 110 were new bears (those not previously captured or handled) and 25 were recaptures from this and previous years. Of the 110 new bears 59 were tagged and released while 45 were mortalities on the initial incident (unknown bears hit by vehicles, etc). Six orphaned cubs were taken in and sent to Idaho Black Bear Rehab near Boise and will be released in Nevada during spring of 2008. There was one bear of undetermined sex or age. An account of age cohorts for all new bears handled is summarized above in Table 2. Most bears were either caught in culvert traps or by free-ranging capture techniques. The free-range captures were usually in response to requests for assistance from local law enforcement agencies.

Mortalities

There were 63 documented mortalities recorded this year (Table 3) and 16 of these were known bears (recaptures). There were 36 bears killed as a result of collisions with vehicles. Five bears (all unknown) were killed for depredating on livestock or agriculture, four by Wildlife Services on the Rafter 7 Ranch along the East Walker River and one in downtown Minden. NDOW had to kill ten bears in deference to public safety as all were breaking and entering homes and/or vehicles. Anthropogenic reasons, other than legal hunting, are the leading cause of documented bear mortalities in Nevada.

Table 3. Documented mortalities 2001-2007

Mortality Type	2001	2002	2003	2004	2005	2006	**2007**
Hit by Car	6	12	4	9	14	22	36
Public Safety	1	5	2	3	1	4	10
Depredation	1	1	0	0	2	5	5
Illegal	2	0	0	0	0	0	3
3 - Strikes	NA	NA	NA	NA	NA	NA	1
Other	0	2	4	1	0	1	8
Total	10	20	10	13	17	32	**63**
Cumulative Total (since 1997)	60	80	90	103	120	152	**215**

Marked Nevada bears killed in other states are not recorded in Table 1. There have been 11 such cases since 2005)

Research

Five adult bears, 3 males and 2 females, were captured and fitted with GPS collars during the 2007 field season. This was in continuation of NDOW's long-term urban bear study with Dr. Jon Beckmann – Wildlife Conservation Society, now in its 10th year. Home range data, fecundity and mortality rates, and behavioral response to human development are some of the aspects of this research. Additionally, with the use of GPS collars researchers may be able to determine response by individual bears to the use of aversive conditioning. A co-authored publication concerning genetic relatedness of Nevada's urban bears will be in

print Spring of 2008. Another co-authored publication on age-specific survivorship is in press as well.

Expenditures

Expenditures for the time period covered by this report include monies spent on drugs and medical supplies, bear trap maintenance, equipment and research supplies and the *Bear Aware*-public education program. Monies spent on controlled substances and capture supplies totaled $4169.32. An additional $1856.88 was committed to bear trap maintenance and repair. $2672.88 was devoted to the *Bear Aware* program. For all operating accounts (Category 58) a total of $10,106.52 was expended in calendar year 2006 for bear management related activities. An additional $24,329 in emergency acquired funding was spent to hire a temporary biologist and dispatcher to assist during the period August-October.

Summary

Based on data collected from captured bears, and from empirical data by NDOW biologists, Nevada's bear population appears to be at healthy and somewhat stable numbers. Habitat fragmentation, loss of travel corridors and the resulting potential loss of genetic diversity are concerns for Nevada's black bear population. This is exacerbated by the increased mortality rates in urban areas. Unfortunately, the higher densities of bears continue to be in those areas in or adjacent to urban settings. These areas, with the highest concentration of available food, also contain the highest level of anthropogenic related bear mortalities. Further studies are needed in the historic use areas to determine bear population densities and the age and sex framework. It is believed that once this information is acquired it will be determined that Nevada's bear population could support a small annual recreational harvest.