
NEVADA DEPARTMENT OF WILDLIFE



2010 - 2011 BIG GAME STATUS

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TABLE OF CONTENTS FOR STATUS REPORTS

BIG GAME STATUS STATEWIDE SUMMARY..... SS1 - SS7

MULE DEER 1

Units 011 - 015: Northern Washoe and Western Humboldt Counties.....	1
Units 021, 022: Southern Washoe County.....	2
Units 031, 032, 034, 035: Western Humboldt County.....	4
Unit 033: Sheldon National Wildlife Refuge; Washoe and Humboldt Counties	5
Units 041, 042: Western Pershing and Southern Humboldt Counties.....	6
Units 043 - 046: Eastern Pershing and Southern Humboldt Counties.....	6
Unit 051: Santa Rosa Mountains; Eastern Humboldt County.....	7
Units 061 - 062, 064, 066 - 068: Independence and Tuscarora Ranges; Elko County	8
Unit 065 Pinyon Range: Southwestern Elko County	9
Units 071 - 079, 091: Northeastern Elko County.....	9
Unit 081: Goose Creek Area; Northeastern Elko County	10
Units 101 - 108: Southern Elko and Northwestern White Pine Counties	11
Units 111 - 113: Eastern White Pine County.....	12
Units 114 - 115: Snake Range; Southeastern White Pine County.....	13
Unit 121: North Egan, Cherry Creek Ranges; White Pine and Elko Counties	14
Units 131 - 134: Southern White Pine, Eastern Nye and Western Lincoln Counties.....	15
Units 141 - 145: Eureka and Eastern White Pine Counties	15
Units 151, 152, 154, 155: Lander and Western Eureka Counties.....	16
Units 161 - 164: Northcentral Nye and Southern Lander and Eureka Counties	17
Units 171 - 173: Northwestern Nye and Southern Lander Counties.....	18
Units 181 - 184: Churchill, Southern Pershing and Western Lander Counties.....	19
Unit 192: Carson River Interstate Herd; Douglas County.....	20
Unit 194, 196: Carson Range and Peavine Mountain Interstate Herd; Washoe and Carson City Counties.....	20
Unit 195: Virginia Range Herd; Storey, Washoe and Lyon Counties	21
Units 201, 202, 204 - 206: Walker / Mono Interstate Deer Herd; Douglas, Lyon, and Mineral Counties.....	21
Unit 203: Mason and Smith Valley Resident Herds; Lyon County	22
Units 211, 212: Esmeralda County	23
Units 221 - 223: Northern Lincoln and Southern White Pine Counties	23
Unit 231: Wilson Creek Range; Northeastern Lincoln County	24
Units 241 - 245: Clover, Delamar, and Meadow Valley Mountain Ranges; Lincoln County.....	24
Units 251 - 253: South Central Nye County.....	25
Units 261 - 268: Clark and Southern Nye Counties	25
Units 271, 272: Southern Lincoln and Northeastern Clark Counties.....	26
Unit 291: Pinenut Mountain Herd; Douglas County.....	26

PRONGHORN ANTELOPE 28

Units 011 - 015, 021, 022: Washoe and Western Humboldt Counties	28
Units 031, 032, 034, 035, 051: Humboldt County	29
Unit 033: Sheldon National Wildlife Refuge; Washoe and Humboldt Counties	30
Units 041, 042: Western Pershing and Southern Humboldt Counties.....	31

Units 043 - 046: Eastern Pershing and Southern Humboldt Counties	32
Units 061, 062, 064, 071, 073: North Central Elko County	33
Units 065, 142, portion of 144: Southern Elko County, Northern Eureka County	34
Unit 066: Owyhee Desert; Northwestern Elko County	34
Units 067, 068: Western Elko and Northern Lander and Eureka Counties	34
Units 072, 074, 075: Northeastern Elko County	35
Units 076, 077, 079, 081, 091: Northeastern Elko County	36
Units 078, 105 - 107, 121: Southeastern Elko and Central White Pine Counties	36
Units 101 - 104, 108, portion of 144: South Central Elko and Western White Pine Counties	37
Units 111 - 114: Eastern White Pine County	37
Units 115, 231, 242: Eastern Lincoln and Southern White Pine Counties	39
Units 131, 145, 163, 164: Southern Eureka, Northeastern Nye, and Southwestern White Pine Counties	39
Units 132-134, 245: Eastern Nye and Western Lincoln Counties	40
Units 141, 143, 151 - 155: Eastern Lander and Eureka Counties	40
Units 161, 162: Northern Nye, Southeastern Lander, and Southwestern Eureka Counties	41
Units 171 - 173: Northwestern Nye and Southern Lander Counties	42
Units 181-184: Churchill, Southern Pershing, Western Lander, and Northern Mineral Counties	43
Units 202, 204: Lyon and Mineral Counties	43
Units 203, 291: Lyon, Douglas Counties	44
Units 205, 206: Eastern Mineral County	44
Units 221 - 223, 241: Lincoln and Southern White Pine Counties	45
Unit 251: Central Nye County	45
ROCKY MOUNTAIN ELK	47
Units 061, 071: Bruneau River and Merritt Mountain Area: Northern Elko County	47
Units 062, 064, 066 - 068: Independence and Tuscarora Ranges; Western Elko and Northern Eureka and Lander Counties	48
Units 072, 074: Jarbidge Mountains; Northern Elko County	48
Unit 073: Stag Mountain Area; Elko County	49
Unit 075: Snake Mountains; Elko County	50
Units 076, 077, 079, 081: Thousand Springs, Goose Creek, and Pequop Mountains Area; Northern Elko County	51
Units 078, portion of 104, 105 - 107: Spruce Mountain; Elko County	52
Unit 091: Pilot Range; Eastern Elko County	53
Unit 101 - 103: East Humboldt and Ruby Mountains; Elko County	53
Units 111 - 115, 221, 222: Schell, Egan, and Snake Ranges; Eastern White Pine, and Northern Lincoln Counties	54
Unit 121 and portion of Units 104 and 108: Cherry Creek, North Egan, Butte, Maverick Springs, and Medicine Ranges; Northern White Pine County, Southern Elko County	55
Units 131, 132: White Pine, Grant and Quinn Canyon Ranges; Southern White Pine and Eastern Nye Counties	56
Units 161 - 164: Northcentral Nye and Southern Lander and Eureka Counties	57
Unit 223: North Pahroc and Bristol Ranges; Lincoln County	58
Unit 231: Wilson Creek Range; Lincoln County	58
Unit 241-242: Delamar and Clover Mountains; Lincoln County	59
Unit 262: Spring Mountains; Clark and Southern Nye Counties	60
DESERT BIGHORN SHEEP	62

Units 044, 182: East and Stillwater Ranges; Pershing and Churchill Counties	62
Unit 045: Tobin Range; Pershing County.....	62
Units 131 and 164: Duckwater Hills, White Pine Range and North Pancake Range; Southern White Pine and Eastern Nye Counties	63
Unit 132: Grant Range; Eastern Nye County.....	64
Unit 133, 245: Pahrangat and Mount Irish Ranges; Lincoln County	64
Unit 134: Pancake Range; Nye County	65
Unit 161: Toquima Range; Northern Nye County	65
Units 162, 163: Monitor and Hot Creek Ranges; Nye County	66
Unit 173: Toiyabe Range; Northern Nye County.....	66
Unit 181: Fairview Peak, Slate Mountain, and Sand Springs Range; Churchill County.....	67
Unit 183: Clan Alpine Range; Churchill County	68
Unit 184: Desatoya Range; Churchill and Lander Counties	68
Unit 202: Wassuk Range; Mineral County	69
Unit 204: Pine Grove Range; Lyon County	69
Unit 205: Gabbs Valley Range, Gillis Range, Pilot Mountains; Eastern Mineral County	70
Unit 206: Excelsior Range; Mineral County	70
Unit 211 North: Monte Cristo Range; Esmeralda County	71
Unit 211South: Silver Peak Range and Volcanic Hills; Esmeralda County	72
Unit 212: Lone Mountain; Esmeralda County.....	72
Unit 221: South Egan Range; Lincoln County.....	73
Unit 223, 241: Hiko, Pahroc, and Delamar Ranges; Lincoln County.....	73
Unit 243: Meadow Valley Mountains; Lincoln County	73
Unit 244: Arrow Canyon Range; Northern Clark County.....	74
Unit 252: Stonewall Mountain; Nye County.....	75
Unit 253: Bare Mountain and Specter Range; Southern Nye County.....	75
Unit 261: Last Chance Range; Southeastern Nye County.....	77
Unit 262: Spring Mountains (La Madre, Red Rock and South Spring Mountains) and Bird Spring Range; Western Clark County.....	77
Unit 263: McCullough Range and Highland Range; Southern Clark County.....	79
Unit 264: Newberry Mountains; Southern Clark County	80
Unit 265: South Eldorado Mountains; Southeastern Clark County	80
Unit 266: North Eldorado Mountains; Southeastern Clark County	81
Unit 267: Black Mountains; Eastern Clark County	82
Unit 268: Muddy Mountains; Clark County	83
Unit 271: Mormon Mountains; Lincoln County	84
Unit 272: Virgin Mountains and Gold Butte; Northeastern Clark County	84
Unit 280: Spotted Range; Northwestern Clark County.....	85
Unit 281: Pintwater Range; Northwestern Clark County	86
Unit 282: Desert Range and Desert Hills; Northwestern Clark County	86
Units 283, 284: East Desert Range and Sheep Range; Northern Clark County	87
Unit 286: Las Vegas Range; Clark County.....	88
CALIFORNIA BIGHORN SHEEP	89
Unit 012: Calico Mountains and High Rock Canyon; Western Humboldt and Washoe Counties	89
Unit 014: Granite Range; Washoe County	90
Units 021, 022: Virginia Mountains; Washoe County	91
Unit 031: Double H, Montana and Trout Creek Mountains; Humboldt County	92

Unit 032: Pine Forest Range and McGee Mountain; Humboldt County	92
Unit 033: Sheldon National Wildlife Refuge; Washoe and Humboldt Counties	93
Unit 034: Black Rock Range; Humboldt County	94
Unit 035: Jackson Mountains; Humboldt County	94
Unit 051: Santa Rosa Range; Humboldt County	95
Units 066, 068: Snowstorm and Sheep Creek; Western Elko and Northern Lander and Eureka Counties	95
ROCKY MOUNTAIN BIGHORN SHEEP	97
Unit 074: The Badlands; Elko County	97
Unit 114: North Snake Range - Mount Moriah; Eastern White Pine County	97
Unit 115: South Snake Range - Mount Wheeler: Eastern White Pine County	98
MOUNTAIN GOAT	100
Unit 101: East Humboldt Mountains; Elko County	100
Unit 102: Ruby Mountains; Elko County	100
Unit 103: South Ruby Mountains; Elko and White Pine Counties	100
MOUNTAIN LION	102
Western Region Areas: 1, 2, 3, 4, 5, 18, 19, 20, and 29	102
Eastern Region: Areas 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15	104
Southern Region: Areas 16, 17, 21, 22, 23, 24, 25, 26 and 27	107
BLACK BEAR	110
Western Region	110

BIG GAME STATUS STATEWIDE SUMMARY

MULE DEER

The 2010 hunting season resulted in the harvest of 6,942 deer. Statewide, hunter success for all hunters in 2010 was 39%, virtually unchanged from 40% observed in 2009. Despite the stability of the 2010 statewide hunter success rate, the percentage of 4 points or better across all weapon classes dropped slightly from 2009's all-time high of 46% to 42% in 2010. The slight decrease to 42% four point or better was primarily attributable to increased fawn recruitment observed in 2010. As more fawns were recruited into the populations, there was a commensurate increase in the availability of one-year-old bucks for harvest.

Since the implementation of split rifle seasons in many areas in 2007, draw odds have remained low for the early hunts at 2:1 to 4:1 and, on average, four to five times higher for the late hunts. As a result of hotter drier conditions in the early hunts, hunter success was typically half of what hunters enjoy in the later hunts. Analysis in 2008 demonstrated that statewide hunter success was approximately three to four percent lower as a result of going to an early/late season split. However, as a result of the lower hunter success, many more hunters can be provided an opportunity to go afield with friends or family and pursue Nevada's most abundant big game animal. Many areas experimented with these early/late season splits in 2007 and 2008. Despite eliminating a select number of these early/late split season hunts in a few areas for the 2009 and 2010 seasons, some of the previously eliminated split season hunts will return in 2011.

Limited post season surveys resulted in 18,611 deer classified statewide, down slightly from approximately 21,600 in 2009. The slight decrease in animals classified reflects decreased survey effort rather than a decrease in deer. Statewide fawn production as indicated by fall surveys improved slightly for the third consecutive year and exceeded 50 fawns:100 does for the first time over that same time period. Spring surveys resulted in the classification of 32,500 deer, just under what was classified in the spring of 2010. For the second consecutive year, fawn recruitment was at 34 fawns/100 adults, up considerably when compared to the 27 fawns:100 adults classified in the spring of 2009 and nearly at the long-term statewide average of 35 fawns:100 adults. Good body condition resulting from favorable spring precipitation and mild conditions on winter ranges in many areas likely contributed to the good recruitment experienced in 2011.

The increase in recruitment observed in 2011 has resulted in a modest (2%) increase in the statewide mule deer population estimate for the second year in a row. Important to recognize in 2011, is that many of the state's management areas are experiencing different changes in population levels. Some populations are increasing, while others are decreasing. Subsequently, population increases observed in some areas are being offset by declines in other areas. However, the end result is a slight statewide population increase. Biologists are optimistic that good body condition, low winter mortality, and mild winter conditions in most areas should help contribute to increased production in the spring of 2011.

PRONGHORN ANTELOPE

Nevada pronghorn hunters continue to enjoy outstanding pronghorn hunting opportunity and subsequent harvest rates. A total of 2,987 tags was sold this past year to hunt pronghorn. This represents an all time high in pronghorn hunting opportunity in the state of Nevada. During 2010 resident rifle hunters harvested 1,340 buck antelope for a 74% success rate. There were 360 tags available across 8 hunts targeting female pronghorn in an attempt to keep numbers in check with carrying capacity. These hunts remain popular with 4 applicants competing for each available tag. In total over 1,900 pronghorn were harvested across all hunts this past year.

Division biologists observed 10,275 pronghorn while conducting annual composition surveys. These surveys yielded ratios of 39 buck:100 doe:35 fawns. Buck ratios remain similar to last year at high levels verifying a continued conservative harvest approach. Fawn ratios declined throughout the northwestern portion of

the state and increased in most of the northeastern and central portion of the state. Overall, fawn ratios declined slightly from what was observed in 2009.

Nevada's estimated statewide pronghorn population increased by 4% this year and is at an all time high of 27,000 animals. The statewide fawn recruitment rate of 35 fawns:100 does provided for this increase. With pronghorn populations at record levels NDOW biologists will continue to monitor herds and recommend solutions to keep them in check with the proper carrying capacity of the range.

ROCKY MOUNTAIN ELK

The sale of 3,545 elk tags in 2010 resulted in the harvest of 1,676 elk compared to 2,972 tags sold last year with a harvest of 1,420. The 2010 reported elk harvest consisted of 756 bulls and 920 antlerless elk. The quality of bulls in the harvest remains high with 66% of bulls reported as being 6-points-or-better. Past harvest strategies were designed to maintain elk herd numbers within individual unit population objectives. However, several proposed antlerless seasons designed to bring elk populations to objective levels or maintain elk populations at objective levels, were eliminated by the Wildlife Commission. This action may severely limit the ability of hunters to harvest the desired number of antlerless animals. In units where elk populations are below objectives, elk harvest management is designed to allow those populations to increase. The Department's Elk Management on Private Lands Program continued to be a great success and benefit to landowners with 89 elk-incentive tags sold for an estimated revenue generation of more than \$700,000.00 for private landowners again this year.

A total of 10,124 elk was classified during aerial winter composition surveys; yielding statewide ratios of 32 bulls:100 cows:42 calves compared to the previous year when 9,222 animals were classified, yielding ratios of 32 bulls:100 cows:31 calves. Calf recruitment was good in 2010 and allowed for population increases in most units. Due to record elk survey samples in some areas, population estimates were increased accordingly. The 2011 statewide adult elk population estimate increased to 13,500 elk compared to 12,300 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. Statewide population increases resulted in an increase in recommended tag quotas overall, with some exceptions by unit, where either calf recruitment was low or where recent harvest strategies have been effective in reducing the elk population such as in the 111-222 unit group.

DESERT BIGHORN SHEEP

The Nevada Department of Wildlife issued another record number of 216 tags in the 2010 desert bighorn hunt. Hunter success continued to be high with 86% of hunters harvesting a ram. The long-term average hunter success rate since 1992 was 85%. Hunters averaged more time in the field in 2010 at 5.7 days hunted compared to 5.2 days hunted in 2009. The statewide average age of harvested rams in 2010 was 6.5 years (above long-term average of 6.3) with an average unofficial B&C score of over 153.

Field biologists classified almost 3,550 animals in the 2010 statewide desert bighorn survey. The calculated lamb ratio of 35 lambs:100 ewes indicates that observed lamb recruitment was higher than the 31 lambs:100 ewes observed in the survey last year. The 2010 statewide desert bighorn population was the highest ever estimated at 7,600 animals which is an increase of 3% from last year's estimate of 7,400.

Though no desert bighorn were transplanted this past year, desert bighorn captures did occur on the Desert National Wildlife Refuge and in central and eastern Nevada as part of research projects to assess predation rates, past exposure to diseases, and current risks from association with domestic sheep in some areas.

ROCKY MOUNTAIN BIGHORN SHEEP

Most of the focus has been on the tragic die-offs of the East Humboldt Range and Ruby Mountain Rocky Mountain bighorn sheep herds in 2009. NDOW biologists and veterinarian confirmed a bacterial pneumonia

event was running its course in both herds in December 2009. As of mid April 2011, approximately 160 known mortalities were documented among both herds. Mature and immature animals of both sexes succumbed to the disease. Follow-up aerial surveys conducted in February 2011 found only 15 bighorns in Unit 101 and 16 bighorns in Unit 102. Population estimates are believed to be below 30 animals in each area.

In the summer 2010 it was discovered that the Unit 091 Rocky Mountain bighorn herd had experienced a die-off. Again, biologists and veterinarian confirmed a bacterial pneumonia event was impacting this herd. Due to this die-off, the 2011 Unit 091 hunt season was closed.

The statewide 2011 Rocky Mountain bighorn sheep population is estimated to be below 250 sheep compared to the 2010 estimate of approximately 300 sheep. The 2009 estimate was close to 550 Rocky Mountain bighorns. Similar to what was seen during the past disease event, it is anticipated poor lamb recruitment in Units 091, 101 and 102 will likely be realized in the next several years, initially suppressing population growth. The Department of Wildlife will continue to conduct monitoring efforts to help better understand the extent of herd declines that these disease outbreaks have caused and to attempt to identify causal agents or catalysts that may have been involved.

Only 2 (Unit 074 and Unit 114) of the 3 units that will be hunted in 2011 were surveyed. A total of 64 Rocky Mountain bighorns was classified which yielded ratios of 70 rams:100 ewes:43 lambs.

Only 5 ram tags were available for 2010 which included a Utah hunter for the 091 herd. All 5 hunters were successful. The average age of rams harvested by Nevada hunters was 5.8 and the average B&C green-score was 153 6/8.

CALIFORNIA BIGHORN SHEEP

Over 10,000 applications were received this past year for 51 California bighorn tags. Resident hunters faced odds of 121:1 while nonresidents faced odds of 954:1. During the 2010 California bighorn season all 51 tag holders were successful in harvesting a ram. The average age of all harvested rams was up slightly to 7.4 years compared to the long-term average of 7.0. The average Boone and Crockett score compared favorably with past years at 156 inches (long-term average was 149 7/8).

Biologists conducted composition surveys of approximately 75% of all hunted California bighorn herds during 2010. A total of 870 bighorn was classified as 193 rams, 454 ewes and 220 lambs for ratios of 42 rams:100 ewes:48 lambs. The total number of sheep observed during these surveys increased slightly from the previous year even with a reduction in the number of hunt units surveyed. Ram and lamb ratios were nearly identical to those obtained during 2009 surveys.

The 2011 statewide California bighorn population estimate rose above 2,000 animals for the first time in the history of Nevada. Bighorns were extirpated from northwestern Nevada in the early 1900's with the first reintroduction of California bighorn sheep occurring in 1968. No die-offs were noted in any populations this past year. High population levels and good ram ratios should allow for an increase in tags during the 2011 season. Overall, biologists are recommending a 5-tag or 11% increase in California bighorn tags for 2011.

MOUNTAIN GOAT

There were 20 mountain goat tags in 2010 including 1 PIW tag, 17 resident tags, and 2 nonresident tags. Hunter success increased slightly from 96% in 2009 to 100% in 2010. In 2010, hunters checked in 12 billies and 8 nannies. Nanny harvest, expressed as a percent of the total harvest, has increased for 5 consecutive years. At 40% in 2010, it was the highest reported and twice the long-term average of 20% nanny harvest. The average age of harvested animals was 6.8 years in Unit 101, 5.6 years in Unit 102, and 3.0 years in Unit 103 in 2010. Average age of harvested animals in Unit 101 has been increasing over the last 6 years and was well above the long-term average of 4.6 years. The same trend exists for Unit 102's average age of harvested mountain goats compared to the long-term average. Horn length was down slightly in Unit

101. Horn length was very close to the long-term average in Unit 102. Unit 103 showed an increase in average horn length over the long-term average. Surveys were conducted in August 2010 and late February and early March, 2011. During the August survey a total of 197 goats was classified. In Unit 101, 100 goats were observed with a ratio of 28 kids:100 adults. In Unit 102, 79 goats were observed with a ratio of 18 kids:100 adults. In Unit 103, 18 goats were observed with a ratio of 20 kids:100 adult. During the February and March survey more goats were observed overall (228), but of concern was the alarmingly low kid ratio of approximately 10 kids:100 adults in both Unit 101 and 102. No kids were observed in Unit 103.

This year goat populations experienced increased mortality in the kid segment of the population which is likely an artifact of the bacterial pneumonia epidemic which afflicted bighorn sheep and goats in the Ruby and East Humboldt mountain ranges during the 2009-2010 winter. Poor kid recruitment observed in the winter of 2010-2011 exacerbated population declines realized from the 2009-2010 disease events. Furthermore, increased nanny harvest created additional concerns for the 3 herds that are exhibiting population declines.

As a result of these data and analyses, the recommended number of goat tags in 2011 was decreased. However, applicants lucky enough to draw one of these tags should still have an opportunity for a hunt of a lifetime in the remote, beautiful, high elevation terrain inhabited by mountain goats in Northeastern Nevada.

MOUNTAIN LION

The 2010-11 (2010) mountain lion hunting season resulted in an overall lion mortality of 197 lions. Sport hunter harvest accounted for 146 lions or 74% of the total lions taken. The 5 and 10-year average for statewide sport harvest of lions was 129 and 143, respectively. The 2010 sport harvest represented a 12% increase over the 2009 sport harvest.

Lions removed for the protection of livestock or human safety (depredation) increased by 10 over 2009 numbers to 32 in 2010. Depredating lions represent 16% of the overall 2010 mortalities. In recent years the Department has implemented a predation management program that utilizes sportsmen's dollars to reduce impacts of predation on ungulate populations, mainly deer and bighorn sheep. During 2010, 14 mountain lions were taken as part of this program. Seven lions were taken from Predation Management Project 18 in Hunt Unit 014, the Granite Range, for the enhancement of mule deer herds. Three lions were taken to protect bighorn sheep on Mount Moriah where lion predation on the resident herd had been identified. An additional 4 lions were taken from the Delamar Range to protect Bighorn Sheep under Predation Management Project 6A. The remaining 6 lions (3%) were killed incidentally, died of natural causes or were hit by vehicles.

Sport harvested lions represented 48% of the statewide harvest limit of 306 mountain lions. Males constituted 60% of the total 2010 sport harvest compared to the 20-year average of 59%.

BLACK BEAR

Nevada's black bear population is thriving and indications are that it is increasing in abundance and distribution. A population analysis completed in 2010 produced some vital rate statistics including a population estimate (in the range of 200-300 animals as of 2008), survival rates, and recruitment rates. Given that the rate of increase (λ) was estimated at about 16% annually the bear population estimate for 2011 is in the range of 300-400 animals. A review of this data analysis is available on the NDOW web site.

Black bear conflict complaints with people increased for 2010 by 77% over 2009 numbers and it was the second highest number of complaints (440) on record (2007-1500+). Most of the conflicts continue to be in Washoe County (56%). NDOW personnel handled 66 individual bears while responding to complaints, 37 of

which were bears not previously marked or captured. The number of new bears each year is an additional indication of the level of immigration and recruitment in Nevada's bear population.

Capture and monitoring efforts continue in areas 19, 20 and 29 in conjunction with a long-term study being conducted with the Wildlife Conservation Society and the University of Nevada, Reno as cooperators. These efforts are focused on determining reproductive rates, fecundity rates, and survival rates along with dispersal patterns. Data collected on Carson Range bears over the last few years will be analyzed to model Resource Selection Functions (RSF) in and around urban areas.

For a complete summary of the bears captured in 2010 and the conflicts responded to by NDOW see the Black Bear Status report on page 110.

WEATHER AND CLIMATE EFFECTS

Southern Nevada (Mojave Desert)

The National Weather Service (NWS) reported above normal total precipitation in 2010 based on the official weather recording station at McCarran International Airport. The annual precipitation total was 5.9", and represented a 31% increase relative to the normal value and a 271% increase compared to total precipitation in 2009. Precipitation recorded in 2010 ranked as the 14th wettest on record since 1937. However, dispersion of storm events throughout the year was not optimal from a wildlife perspective. While storms occurred at the beginning and end of the year, the monsoon season was largely inactive. The NWS reported 2010 as the 9th warmest year on record, and July as the hottest month ever recorded. Higher average annual temperatures in recent years were due to higher minimum temperatures. The average minimum temperature at McCarran International Airport was 59.3 degrees, and ranked as the 4th warmest on record.

Environmental conditions in the Mojave Desert region are favorable due to precipitation-producing storms in late fall and early winter 2010, and in early spring 2011. In the latter half of December 2010, storms produced adequate precipitation to recharge nearly all wildlife water developments.

Southeastern Nevada

Precipitation data collected by CEMP (Community Environmental Monitoring Program) indicates that the overall average precipitation received in the communities of Pioche, Caliente, Alamo, Ely, and Mesquite was 149% of the previous 10-year average. According to BLM rain gauge data obtained from 26 locations around Lincoln County, the precipitation received during 2010 was 169% of the previous 10-year average. The timing of the precipitation received is very important in southeastern Nevada. Slightly above-average precipitation was received during January, February, and March. Below average precipitation was received during April through July. Precipitation received during September was below average throughout southeastern Nevada, while October was above average. November was close to average and then December was well above average due to a very wet storm that passed through just after Christmas and dumped large amounts of rain throughout Lincoln County.

The year-to-date totals thus far in 2011 show that southeastern Nevada is at approximately 78% of average precipitation during January, February, and March. Still, with the higher-than-average precipitation received during 2010, habitat conditions in southeastern Nevada should be good to excellent. Additionally, the BLM has removed some of the feral horses in Areas 22 and 23 that were destroying wildlife habitat throughout these areas. This will help protect wildlife habitat, although numbers of feral horses remain well above AML in all areas.

Central Nevada

Data published by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) indicate that central Nevada experienced average to above average moisture receipts during most months from June 2009 to May 2010. Many wildlife species, and their habitats, which had

suffered in 2006, 2007, and parts of 2008 through some of the worst conditions seen in central Nevada for some time, greatly benefited from this reprieve. Moisture during late summer and fall is particularly critical for providing a boost to the nutrient content of forage, which allows wildlife species to enter the winter in good condition, and fortunately, this was the case in 2009.

National Weather and Climate Center data indicates that a return to much drier conditions plagued the summer of 2010, which resulted in somewhat diminished forage quality moving into late summer, early fall. Luckily, favorable precipitation patterns beginning in October may have helped to temper some of the effects caused by the very dry summer. Above average amounts of precipitation continued to fall through December. USDA, NRCS data indicate snow accumulations of 300% of normal for the month of December 2010. While January and February 2011 saw very little in the way of moisture receipts, the wet fall and extraordinarily snowy month of December provided a cushion of sorts, and allowed central Nevada to end up with average snowpack conditions heading into March 2011. Although overwinter mortality was expected to have been relatively low as the winter progressed due to the warm, dry spell during January and February allowing the lower elevations and benches to remain free of snow, mortality rates in December were expected to have been higher than average.

Good amounts of precipitation were received in March throughout central Nevada. If these favorable conditions continue through the spring, range conditions should respond favorably, and increases in the productivity of big game species in this portion of the state can be expected at least over the short-term.

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 24 April 2011 and total water year precipitation from 1 October 2010 - 24 April 2011 in inches (Natural Resources Conservation Service).

BASIN	Data Site Name - elev. ft	Unit(s)	Snow Water Equivalent			Total Precipitation		
			Current	Average	% of Avg	Current	Average	% of Avg
NORTHERN GREAT BASIN					<u>161</u>			<u>145</u>
	Disaster Peak - 6,500	031	0.1	4.2	2	25.5	16	159
	Sheldon - 5,800	033	0	0		9.9	6.1	162
TRUCKEE RIVER					<u>177</u>			<u>146</u>
	Mt Rose Ski Area - 8,801	194	53.6	42.8	125	65.5	46	142
	Big Meadow - 8,249	194	33.3	18.8	177	43.5	29.2	149
CARSON RIVER		192			<u>165</u>			<u>148</u>
WALKER RIVER		201			<u>151</u>			<u>145</u>
JARBIDGE/SNAKE RIVER					<u>140</u>			<u>137</u>
	Pole Creek R.S. - 8,330	072	28.3	21.1	134	19	13.5	141
BRUNEAU RIVER					<u>155</u>			<u>137</u>
	Big Bend - 6,700	061/071	9.9	3.7	268	16.7	12.3	136
	Bear Creek - 8,040	071/072	30.2	20.7	146	37.3	25.7	145
	Seventysix Creek - 7,100	071/072	7.9	5.6	141	18.9	15.8	120
OWYHEE RIVER					<u>149</u>			<u>130</u>
	Fawn Creek - 7,000	062	23.2	16.7	139	33.9	26	130
	Jack Creek Upper - 7,250	062	21.3	19.4	110	28	21.9	128
	Laurel Draw - 6,697	062	10	3.1	323	27	20.5	132
	Taylor Canyon - 6,200	068/062	0.5	0.7	71	12.8	9.1	141
LOWER HUMBOLDT RIVER					<u>158</u>			<u>144</u>
	Big Creek Summit - 8,695	173	26.5	19.3	137	24.8	19.4	128
	Buckskin Lower - 6,915	051	16.8	5	336	28.2	19.8	142
	Granite Peak - 8,543	051	37.1	25.6	145	39	26.1	149
	Lamance Creek - 6,000	051	6.6	5.2	127	33.2	21.6	154
UPPER HUMBOLDT RIVER					<u>168</u>			<u>146</u>
	Draw Creek - 7,200	072	13.4	5.1	263	25.2	14.3	176
	Dorsey Basin - 8,100	101/102	18.6	11.7	159	29.4	23.1	127
	Green Mountain - 8,000	102	19.2	10.1	190	30.9	23.1	134
	Lamoille #3 - 7,700	102	18.3	9.6	191	35.9	22.9	157
CLOVER VALLEY					<u>138</u>			<u>149</u>
	Hole-in-Mountain - 7,900	101	23.9	17.3	138	37.8	25.3	149
EASTERN NEVADA					<u>183</u>			<u>154</u>
	Berry Creek - 9,100	111	25.2	15.9	158	29.8	17.6	169
	Diamond Peak - 8,033	141	0.4	1.8	22	17.8	16.5	108
	Ward Mountain - 9,200	221	21.7	8.1	268	27.3	14.4	190

**BIG GAME HERD
STATUS REPORTS**

MULE DEER

Units 011 - 015: Northern Washoe and Western Humboldt Counties

Report by: Chris Hampson

Harvest

The 2010 rifle hunting season ran from the first week of October thru the end of October. However, the Nevada Wildlife Commission recently voted to return the 2011 and 2012 general deer rifle seasons to a split season scenario that will run from October 5 thru October 20 for the early season and from October 21 thru November 5 for the late season. The split season scenario was adopted for Hunt Unit Group 011-013 and unit 014. This was the same hunting season format that was used in 2007 and 2008.

The 2011 rifle season in Hunt Unit 015 will be a late-season format and run from December 21st thru January 1. Mule deer from California hunt Unit X5b migrate into Nevada Hunt Unit 015 in the winter. This late season hunting format was used to ensure that Nevada hunters were hunting when the highest number of deer were available and have the highest chance for success.

In 2010, the resident rifle hunter success rate for Unit group 011-013 was 47%. This was 6% below the 2009 success rate of 53%. However, the percent 4-point or better in the harvest for this unit group remained strong at 55%. In Hunt Unit 014, success rates remained high at 65% with a 60% 4pt or better in the harvest. The statewide averages for hunter success were 39%, while the statewide average for percent 4-point or better in the harvest was 38%.

Hunter success rates in Hunt Unit 015 were largely dependent on the amount of snowfall or inclement weather that occurred prior to the hunting season. During mild winters in 2007 and 2008, hunter success rates averaged just 14%. Hunter success rates for the past two years increased to 47% in 2009 and 46% in 2010. The increase in the number of deer that moved into Nevada during the past two winters was also apparent in the numbers of deer classified during spring deer surveys. In the spring 2010, a total of 622 deer was classified in Unit 015. This sample was the highest number of deer classified since spring 2000.

Survey Data

The 2010 post-season composition surveys were conducted immediately following the hunting season. This earlier time frame for surveys may have been a bit too early and it is believed buck ratios were generally more accurate when surveys were conducted during the peak of the rut. In 2009, surveys were conducted approximately 10 days later during the peak of the rut and observed buck ratios were higher. In 2010, biologists classified 621 deer in Management Area 1 with sex and age ratios of 29 bucks:100 does:56 fawns. California biologists were not able to fly their typical fall surveys for the Lassen County deer herd which inhabits hunt unit X5b in California. A percentage of the California X5b deer population migrates into Nevada Hunt Unit 015 during late November and December.

In the fall of 2010, fawn ratios averaged between 53 and 63 fawns:100 does in Management Area 1. This was down from 2009 fall fawn ratios that were between 70 and 73 fawns:100 does. Portions of Management Area 1 were very dry during the summer and fall of 2010. The extreme northwestern corner of the state was especially dry in 2010. Most of the large lakebeds and reservoirs on top of the Vya Rim were completely dry by late summer 2010. Fortunately, sufficient amounts of snowfall and precipitation were finally received during the winter of 2010-11. This will help to alleviate some of the effects of several consecutive dry years.

Weather was once again a major factor influencing spring deer surveys. As was the case in 2009, storm fronts canceled and delayed surveys this past spring. Actual survey hours were reduced again due to the inclement weather. Sample sizes reflected the reduced survey effort. A total of 574 deer was classified during surveys yielding a ratio of 41 fawns:100 Adults. In 2009, the average fawn ratio was 10 fawns higher



at 51 fawns:100 adults. In 2010, fawn ratios within Management Area 1 ranged between 39 and 43 fawns:100 adults.

Habitat

Despite improved moisture receipts during late winter and spring 2010, very dry conditions were once again the norm by the end of the summer. Many of the major lakebeds and water sources in northern Washoe County were completely dry by late summer. These large lakes and water sources gradually dried up over the consecutive dry years between 2007 and 2009. Although, 2010 was an average year for overall precipitation and moisture, the amount of moisture received was not sufficient to combat the effects of several consecutive drought years. Animal distribution changed dramatically over the summer months as animals were displaced due to drying conditions. Mule deer and other wildlife were forced to search out areas with better forage and reliable water.

The winter of 2010-11 provided hope that sufficient spring runoff may fill large lakes and reservoirs. Important springs and seeps should also have improved water flows due to the excellent moisture received this year. As of April 1, 2011, the northern Great Basin which covers much of northern Washoe County, showed precipitation and snowfall totals between 130 and 150% of average. Spring and early summer runoff was predicted to be well above average.

Population Status and Trend

The predator control project in the Granite Range of Unit 014 is currently in its 6th year. Wildlife Services has removed lions and coyotes from the area since early 2005. Thus far, over 35 lions have been removed from the hunt unit. The preliminary analysis of the project can be viewed in the 2011 Predator Management Plan under project # 18. This project is currently scheduled to last 10 years.

Improved moisture receipts from this past winter will improve water availability and forage conditions for mule deer. Lower elevation spring sources that have suffered the most from the consecutive years of drought should also experience improved flows this summer. The carrying capacity for mule deer should increase in Management Area 1 this year due to increased water receipts and an increase in the quantity and quality of mule deer forage. Improved habitat conditions should help all wildlife species.

Recruitment rates will allow for a continued upward trend for most Washoe County deer herds. Harvest data showed the percent 4-point or better to be between 51% and 56% for all Management Area 1 hunt units. Data indicate older aged class bucks make up a high percentage of the buck segment and are available for harvest. Quota recommendations in 2011 should generally show increases when compared with the 2010 hunting season.

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

Harvest

Nevada Hunt Unit 021 represents critical winter range for interstate mule deer herds that migrate from California hunt Units X6b, and X7a. The late season structure for the hunt unit was moved later to give hunters the chance to hunt when deer numbers on the Nevada side of the line are highest. All weapon classes hunt during the month of December with each of the seasons lasting between 10 and 12 days. Mule deer that reside in the Virginia Mountains and the Pah Rah Range of Hunt Unit 022 are a non-migratory herd that merely moves to the lower elevations during the winter. The hunting season for this herd was the typical 27 day season starting on October 5 and lasting until the end of the month.

Resident rifle hunter success dropped to 41% in hunt Unit 021 in 2010. Some hunters reported observing more deer during the latter portion of the hunting season. Deer migration into this hunt unit can be affected by the timing and severity of the winter. The number of deer classified during the spring 2011



deer survey was the highest observed since 1999. Heavy snow accumulations in the upper elevations in California forced more mule deer to move into Nevada Hunt Unit 021 this year.

In Hunt Unit 022, the hunter success rate improved to 54% for resident rifle hunters. Hunter success rates in this unit have slowly increased in recent years. However, deer population fluctuations are small due to habitat limitations and ever increasing human encroachment.

Survey Data

Fall surveys were conducted by California Fish and Game biologists in hunt units X6b and X7a. A total of 900 mule deer was classified yielding sex and age ratios of 21 bucks:100 does:47 fawns. These surveys were conducted during November following the deer season. No fall surveys are conducted within Nevada hunt Unit 022.

Spring deer flights in Hunt Unit 021 classified the highest number of deer since 1999. A total of 524 deer was classified with a ratio of 47 fawns:100 adults. This represents an excellent spring fawn ratio for this Interstate deer herd.

Spring surveys in Unit 022 were conducted in early March 2011. Biologists classified 123 mule deer from the northern portions of the Virginia Mountains. This sample provided a composition ratio of 45 fawns:100 adults. Mule deer were located in smaller groups and scattered over a larger area this year. In 2009, deer were concentrated on winter range and a total of 231 deer was classified.

Habitat

Habitat conditions throughout northwestern Nevada should improve dramatically this year with the exceptional moisture received this past winter. All of the basins in western Nevada report snowfall and total precipitation totals between 130% and 150%+ of average as of April 1, 2011. Spring runoff should be very good and help to re-fill lakes and reservoirs that had been seriously impacted from several consecutive years of below-average precipitation. Improved soil moisture should allow for excellent plant growth once temperatures start to warm during spring and early summer. The quantity and quality of mule deer forage should improve significantly compared with conditions that occurred during the very dry years of 2007 thru 2009.

Spring mule deer surveys in Hunt Unit 021 located good numbers of wintering mule deer on the southwestern corner of the Petersen Mountains. The deer were observed to be even more concentrated this year due to the loss of 10,000 acres of surrounding habitat that burned over the past couple of years. Although, a majority of the burned area was reseeded with sagebrush and native forbs and grasses, it will take years for the sagebrush to become established to the point that it will provide good thermal cover for mule deer. Deer were concentrated in the remnant sagebrush and bitterbrush communities that remain on the southwestern portion of the Petersen Mountains. These remnant stands of native brush have been shrinking at an alarming rate over the past thirty years. Many of these burned areas have re-burned multiple times due to the establishment of cheatgrass. Protecting these remaining stands of native brush is critical to the future of this deer herd.

Past wildfires have also impacted mule deer in the Virginia Mountains of Hunt Unit 022. The large fire that burned on the northern end of the Virginia Mountains in 1999 consumed important summer/fall and winter habitat. Although much of the area responded well with native grasses, the native brush communities have been very slow to re-establish. A few north slopes and lower elevation winter habitats are showing some signs of recovery but do not currently provide good thermal cover for mule deer. Mule deer were often observed inhabiting portions of the burn that do not currently have high quality thermal cover during winter and spring months.

Population Status and Trend

Fawn recruitment for the Management Area 2 deer herds was strong in 2010. This should result in an increasing trend for deer herds that live north and east of the Reno/Sparks area. Deer herds in



Management Area 2 are limited by numerous factors including expansive areas of burned habitat, housing development, proposed energy development, and other forms of human encroachment such as motorcycle and ATV recreational use. Many of these limitations are due to the fact that these deer herds live in close proximity to a large metropolitan area.

Wildlife Services continues to monitor the northern portion of the Virginia Mountains for mountain lion control. The project was instituted following an augmentation of California bighorn into the Big Canyon area in 2007. The project was initiated in an effort to reduce lion predation on this low density bighorn herd. Approximately seven lions have been removed over this time period.

Quota recommendations for the Management Area 2 deer herds for the 2011 hunting seasons are expected to increase. The hunting public will continue to be challenged by access issues and the ever increasing human encroachment. Areas to hunt mule deer will continue to shrink in the future as more development and habitat loss occurs. Mule deer numbers will also continue to shrink over the long-term as more and more habitat is lost or disturbed.

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

Survey Data

Aerial surveys were conducted during both fall and spring in Management Area 3 this past year. During mid to late November 2010, a post-season helicopter flight was conducted. This flight was split up into two different time frames due to weather conditions. A total of 892 deer was classified which was well above the 2009 survey of 545 deer. Overall, ratios obtained from these surveys were 24 bucks:100 does:51 fawns. The past five-year average for these units was 36 bucks:100 does:57 fawns. Both buck and fawn ratios were down slightly from the past five-year average.

A spring helicopter survey was conducted during mid March 2011. A total of 1202 deer was classified which was significantly more than the 811 classified in 2010. This year's survey yielded a ratio of 43 fawns:100 adults. This ratio was comparable to the past five-year average of 41 fawns:100 adults.

Habitat

Management Area 3 received much needed moisture during this past year. Storms began in mid October and continued through December. During January, warmer weather provided an early green-up which increased forage availability. Since that time plenty of moisture has been received and the outlook for vegetation is very positive at this point.

Habitat improvement projects continue in Management Area 3. Several sagebrush plantings have occurred in an attempt to reestablish areas of sage brush that have been lost in past fires. Future projects are being evaluated that will protect existing habitats and enhance those areas in need of rehabilitation.

Population Status and Trend

Population estimates for Management Area 3 have remained relatively stable over the last 3 years. The only population that has shown an increase is within Unit 031. Mule deer in this unit seem to be doing well with better than average fawn recruitment. All of these populations are still substantially lower than historic highs primarily due to a long-term decline in range conditions. Winter range in most of these units remains the limiting factor for these populations. Many of the traditional winter use areas have been converted to annual grass due to fires. Current and future habitat projects may forestall this decline and help other wildlife species.



Unit 033: Sheldon National Wildlife Refuge; Washoe and Humboldt Counties

Report by: Chris Hampson

Harvest

The hunting season for rifle hunters on the Sheldon will continue under a split season scenario in 2011. The early season hunt begins on the 5th of October and ends on October 20th. The late season starts October 21st and runs through November 5th. In recent years, the early season has been a tough hunt with success rates in the upper 20% to upper 30%. The late season hunt has generally been much better as success rates have been between 50% and 65% over the past few years.

In 2010, early season hunters continued to struggle as the 29% hunter success rate indicates. The 4-point or better in the harvest for the early season was 50%. Late season hunters enjoyed more success and reported 61% hunter success and a 64% 4-point or better in the harvest. Overall, the 4-point or better in the harvest for all weapons types and all hunts was 51% on the Sheldon.

Survey Data

Post-season surveys on the Sheldon were hampered by snow and high winds. A storm front that pushed its way through the area dumped several inches of snow. High winds that accompanied the storm pushed mule deer off of the top of the mountain into heavy mahogany cover at the lower elevations. This made locating and classifying mule deer much more difficult. Very few deer were located in areas that normally hold good numbers of animals. This survey was ultimately canceled due to the weather and resulted in a small sample of 137 mule deer classified. This post-season sample provided sex and age ratios of 36 bucks:100 does:54 fawns. In 2009, a total of 291 deer was classified with ratios of 36 bucks:100 does:72 fawns.

Spring surveys focused on the following areas: Virgin Creek, Sagebrush Creek, and the southern exposures on Big Springs Table. The lower elevations in the Sage Hen Hills were also surveyed while ferrying the ship back to Cedarville. Mule deer were located in small pockets or groups and not concentrated in any one area. The winter range on the Sheldon is extensive and deer scatter from the Virgin Creek/Sagebrush Creek area east to the eastern portions of McGee Mountain and north all the way into Oregon. A mule deer collaring project showed deer scattering out in the winter depending on snow conditions. No major winter concentration areas were located. A total of 101 mule deer was located during spring surveys yielding a ratio of 40 fawns:100 adults. This was 3 fawns:100 adults lower than what was observed in 2010.

Habitat

Habitat conditions on the Sheldon suffered significantly since the record dry year in 2007. Both 2008 and 2009 were below-average water years as well. In 2010, dry conditions continued until the late in the year when more moisture was received. The year ended near the long-term average for precipitation. However, three consecutive drought years followed by an average water year left habitat conditions on the Sheldon in poor shape. By the end of 2009, many of the lakes and reservoirs were completely dry.

Fortunately, the winter of 2010-11 was exceptional as far as the amount of snowfall and total precipitation received. As of April 1, 2011, the Snotel site on the Sheldon showed the area received 8.4 inches of precipitation since the water year began on October 1, 2010. This amount of moisture was far above totals for this same time last year which was just 4.6 inches of total precipitation. Since 2007, this same Snotel site on the Sheldon averaged just 4.7 inches of precipitation for this same time period. The increased moisture should help re-fill many of the lakes and reservoirs on the Sheldon and allow animals to move back to their normal summer ranges that have been dry over the past several years.

Carrying capacity for mule deer on the Sheldon has been significantly reduced by the loss of habitat from fire. Major deer summer range that burned over the past two decades includes Badger Mountain, Catnip Mountain, Devaney Mountain and Alkali Peak. It was estimated that 50% to 60% of important mule deer summer range on the Sheldon was lost to wild fires. Native shrubs and trees such as sagebrush, bitterbrush



and mountain mahogany were burned. These burned areas have not fully recovered and do not currently provide mule deer with the quality forage and escape/thermal cover that was once available. Many of the burned areas currently have a good native grass understory but lack the critical brush component. Mountain Mahogany was severely impacted in these burned areas and has not re-established.

Population Status and Trend

Mule deer numbers on the Sheldon have declined since the winter of 2006-07. Drought conditions that began in 2007 severely impacted habitat conditions on the Sheldon over the past several years. The recruitment level observed this year should allow the Sheldon herd to reverse this downward trend. Significant moisture received this past winter should also help to offset very dry conditions that have persisted since 2007. Habitat conditions and the amount of water available to mule deer and other wildlife should improve significantly this coming summer and fall. Hopefully, the Sheldon will continue to receive additional moisture through the remainder of the spring and early summer months.

The recruitment level of 40 fawns:100 adults will allow for herd growth. Habitat conditions should improve significantly this coming year. Quotas recommendations for 2011 are expected to increase from the previous year.

Units 041, 042: Western Pershing and Southern Humboldt Counties

Report by: Kyle Neill

Survey Data

No post-season surveys were conducted in 2010. Spring surveys were conducted from the ground in March and occurred in the Selenite, Seven Troughs and Trinity Ranges. An aerial survey was performed in early April in the Eugene Mountains. Combined mule deer observations totaled 124 animals and resulted in a ratio of 35 fawns:100 adults. The 2011 spring fawn ratio was near the long-term average (1991-2011) of 36 fawns:100 adults. The 2011 spring sample size was the highest count since Unit Group 041,042 was split from Unit Group 043-046 in 1990 (excluding mule deer counted in Lovelock Valley).

Habitat

Quality mule deer habitat in western Pershing County declined considerably following wildfires from 2000-2001 and 2008, which converted good mule deer habitat into annual grasslands. Moreover, when comparing units 041, 042 to units 043-046, units 041, 042 lack significant elevations on many of its mountain ranges, which reduces the amount of moisture received during storm events and results in fewer shrub species that are important to mule deer.

Population Status and Trend

Western Pershing County's mule deer population remains stable at 750 animals following a population high of 1,000 animals with a growth trend from 1999 to 2009. This herd has demonstrated a static population trend since 2009. Overall, Units 041, 042's average mule deer population estimate from 1990 to 2011 was 850 animals.

Units 043 - 046: Eastern Pershing and Southern Humboldt Counties

Report by: Kyle Neill

Survey Data

Fall mule deer surveys were not conducted in 2008 and 2009. In 2010, aerial fall mule deer surveys occurred in all units within this unit group. A total of 661 mule deer was observed during an 8 hour survey. Sex and age ratios were 24 bucks:100 does:50 fawns. The 2010 buck ratio of 24 was approximately 25% below the long-term average of 32 bucks:100 does. The fawn ratio of 50 fawns:100 does was also below the long-term average of 59 fawns:100 does.



Spring surveys took place in mid to late March 2011. Approximately 6 hours of flight time were expended which resulted in the observation of 619 mule deer. Deer classified during this flight yielded a spring fawn ratio of 36 fawns:100 adults. The 2011 fawn ratio was slightly above maintenance level and should only marginally improve herd growth.

Habitat

During the summer of 2010 a wildfire occurred in the Humboldt Range, Unit 043, and burned Indian Canyon and parts of Cottonwood Canyon. This fire consumed 1,571 acres, of which BLM has aerial seeded 296 acres with Wyoming big sagebrush. Overall, this fire converted sagebrush into annual grasslands in the lower elevations of these canyons. Fortunately, upper elevations remain unburned. Additionally, mule deer were observed in both of these canyons during spring aerial surveys utilizing new forb and grass production.

Large scale wildfires that occurred in 2000 and 2001 have converted shrub dominated winter range into annual grasslands. Fortunately high quality summer habitat in this area escaped recent wildfires and this enabled mule deer to enter the winter months in good to excellent condition. Also, mild winters have allowed deer to utilize the toe slopes of mountain ranges to access green-up throughout the winter.

Population Status and Trend

Eastern Pershing County's mule deer population estimate for 2011 is 3,300 animals and represents an all time high estimate for this herd. Indicators of high population include recruitment rates that have averaged 46 fawns:100 adults since 2004 which allowed this herd to grow at an average rate of 5% per year. Percent 4-point or better bucks harvested for all hunts has averaged 47% over the last four years (long-term average of 42%). Furthermore, spring survey sample size averaged 620 mule deer over the last five-years, which was 46% greater than the long-term average (1991-2011) of 424 animals.

Unit 051: Santa Rosa Mountains; Eastern Humboldt County

Report by: Ed Partee

Survey Data

Post-season helicopter flights were conducted at the beginning of December 2010 which was slightly later than normal due to inclement weather conditions. A total of 202 deer was classified during this December survey. Ratios obtained from these surveys were 23 bucks:100 does:56 fawns. The buck ratio was down slightly from the previous five-year average of 29 bucks:100 does while the fawn ratio increased slightly from the previous five-year average of 52 fawns:100 does.

Spring helicopter flights were conducted during early March 2011. A total of 409 deer was classified which was approximately 200 less than what was observed last year. The spring fawn ratio obtained from this survey was 43 fawns:100 adults. This recruitment rate was near the past five-year average of 42 fawns:100 adults.

Habitat

There was no additional loss of mule deer habitat in this unit over the past year. A significant change in weather patterns should improve habitat conditions in this management area. Storms began in mid October and continued through December. During January warmer weather provided an early green-up which increased forage availability. Since that time plenty of moisture was received and the outlook for favorable range conditions this year is very positive at this point. Projects are taking place to protect and enhance habitat conditions along the west side of the Santa Rosa Range.



Population Status and Trend

The 2011 mule deer population estimate for Unit 051 was reduced slightly from what was published last year. Fall buck ratios and spring fawn ratios have fallen slightly from the past five-year average and the 2011 population estimate reflects these changes. Increased precipitation combined with relatively mild winter conditions allowed for low winter mortality this spring. A warming trend in January of 2011 produced an early green-up which benefited this deer herd.

Units 061 - 062, 064, 066 - 068: Independence and Tuscarora Ranges; Elko County
Report by: Matthew Jeffress

Harvest Results

There were 835 rifle buck tags (resident and nonresident) available in 2010. This represents a 15% increase from the 2009 quota. The average hunter success rate for all rifle buck hunters was 49%, which was 7% higher than last year's success rate. Forty-four percent of all bucks harvested supported 4-points or better. The past 10-year-average for 4-point or better bucks was 42%. For more specific hunting results, please refer to 2010 Harvest Tables in the Appendix.

Survey Data

A spring helicopter survey was conducted in March 2011. A total of 3,810 deer was classified; yielding a fawn:adult ratio of 43 fawns:100 adults. This fawn ratio was slightly higher than last year and 7 fawns:100 adults above the past 10-year-average.

Habitat

Drier than normal spring and summer conditions in 2010 were followed by a wetter than normal fall. Snow accumulations in November forced deer onto winter range early; however the winter of 2010-2011 was eased by several weeks of above normal temperatures in December, January and February. Open conditions allowed deer to utilize the Area 6 winter range in its entirety, leading to good overwinter survival. High utilization of forage kochia was observed throughout the Izzenhood, Sheep Creek and south Tuscarora Ranges.

Between the years of 1999 and 2007, over 1,370,864 acres of rangeland burned in Area 6, much of which was important deer habitat. In response to the significant amount of habitat loss, tens of thousands of acres of winter range has been reseeded with desirable forage species. Success of these seedings is heavily reliant on timely moisture, proper grazing practices, and prevention from additional fires. While positive recovery has been observed at mid to upper elevations, recovery of critical low elevation winter range continues to be a struggle in Area 6.

In spite of the challenges, Elko BLM, NDOW, private landowners and sportsman's organizations continue to target key winter ranges for habitat improvement projects in Area 6. In early April 2011, an effort led by the Elko BLM and Nevada Muleys resulted in the planting of approximately 3,000 sagebrush seedlings and 1,000 bitter brush seedlings on the north end of the Izzenhood Range. Approximately 30 volunteers participated in this project.

No additional predator management activities, above existing normal levels, occurred in Area 6 this past year.

Population Status and Trend

The Area 6 deer herd population estimate increased by approximately 550 deer over last year's estimate. Good fawn recruitment facilitated by excellent summer range combined with the mild winter was responsible for most of this increase.



This deer herd is capable of increasing rapidly due to the excellent summer habitat and high fawn producing capabilities associated with this area. This was the case over the past 2 years, with the herd increasing by 12% in 2009-2010 and 8% in 2010-2011. However, poor winter range conditions in Area 6 will dictate long-term population levels as it has done for most of the past decade.

It is believed the Area 6 Deer Herd is still slightly below the carrying capacity of available winter range. With the lack of fires during the past 3 years combined with successful restoration efforts realized on the Marsh Creek Bench, the Izzenhood Range and the north Tuscarora Range, it is believed the capacity of the winter range has increased over the past couple of years. However, continued aggressive habitat restoration efforts are needed to increase the winter habitat carrying capacity for deer in this management area. If fire suppression priorities and techniques are not addressed and fires continue to burn out of control in this area, no level of habitat restoration will be enough to maintain the current population, much less provide for a population increase.

The recommended buck quota for 2011 should be up from the 2010 quota due to the increase in population.

Unit 065 Pinyon Range: Southwestern Elko County
Report by: Scott Roberts

Survey Data

An aerial spring survey was conducted in April 2011. A total of 157 deer was classified yielding an age ratio of 35 fawns:100 adults. The survey took place relatively late in the year which made locating deer concentrations difficult.

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. Future habitat restoration projects will be crucial to sustaining and enhancing deer habitat in Unit 065. Newmont Mining Corp. will be breaking ground on the Emigrant Project this year. This new mine will be located due east of the existing Rain Mine in the northern portion of Unit 065. The effect on deer habitat is expected to be minimal, but it will increase the traffic and level of disturbance within the area.

Population Status and Trend

Poor habitat conditions have resulted in population levels that are below historic levels. This is the second year in a row with above average fawn recruitment. Better recruitment rates resulted in modest population growth within the unit. This unit is managed as a “quality” hunt area and continues to produce good bucks.

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

Harvest Results

The 071 unit group had a split in the Any Legal Weapon hunt for the 2010 hunting season. The 2010 hunter success for the early season was 47%, slightly above last year's 41%. The late season hunter success was also higher at 69%, up from 63% in 2009. In 2009, harvest of 4-point or better bucks was 32% early and 61% late. This year harvest of 4-point or better bucks was 32% in the early season and 67% late.

The archery season has been split into an August-September early hunt and a November late hunt in the 071 unit group since 2007. The 2009 archery success was 17% early, and slightly higher this year at 20%. Late season success increased from 9% in 2009 to 28% in 2010. In 2009, the percentage of 4-point or



better bucks was 32% early and 50% late. This year harvest of 4-point or better bucks was 39% early and 55% late.

Survey Data

Post-season helicopter surveys were not flown in this unit group this year. Spring surveys were flown in late March of 2011. A total of 2,791 mule deer was classified during the survey; yielding a ratio of 42 fawns:100 adults. This year's recruitment rate was 20% higher than the previous 5-year-average of 35 fawns:100 adults.

Habitat

Deer habitat in this unit group has been reduced following the 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. However, even in areas where weed invasion has not occurred and perennial grasses and forbs are found, it is taking years for the shrubs, mainly sagebrush and bitterbrush, to return to these burned areas.

The 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. Fifteen deer were radio-collared in the fall of 2008 and additional 12 were collared in the fall of 2010. The information collected from these collaring projects will help the Nevada Department of Wildlife and the Nevada Department of Transportation, in a collaborative effort; reduce the amount of vehicle mortality that is occurring. During the fall of 2010 one overpass and two underpasses near Ten Mile Summit north of Wells on U.S. Highway 93 were ready for the fall deer migration. A UNR graduate student monitored these sites with cameras and it was reported that nearly 3,600 mule deer utilized the wildlife crossings. Deer readily used the overpass as expected with nearly 3,000 of those 3,600 deer successfully crossing over it. By next fall 2 overpasses and 3 under-crossings should be in place to facilitate deer movement across Highway 93 which will significantly reduce vehicle-deer collisions.

Population Status and Trend

In November 2010 snow events and freezing temperatures arrived early. Luckily, the rest of the winter storms were more dispersed with some warming events occurring through January which reduced winter mortality and contributed to higher winter fawn recruitment. The population model for Unit Group 071-079,091 estimates a 2011 pre-hunt adult mule deer population slightly above 2010.

The deer collaring that has been done the last few years has been instrumental in better understanding migration triggers, timing, paths, and length (some deer are moving more than 100 miles to winter range). A better understanding of seasonal use patterns for the Area 7 Deer Herd is also being obtained through these collaring projects.

A predator project was initiated in Area 7 this spring. Specifically coyotes were targeted through aerial gunning in Units 074 and 076 by Wildlife Services. So far there has been 3 days of predator removal that occurred in late March 2011. Removal efforts will be reported as the project progresses.

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

Survey Data

Surveys were not conducted in this unit this year.

Habitat

The 081 deer herd's winter range and some summer range were significantly impacted by the West Fork Fire in 2007. The fire burned 154,943 acres of primarily winter range. The fire burned very hot and left few islands of habitat. Although the area was intensely seeded the first winter following the fire, it will be several 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 both Idaho and Utah. The magnitude of this migration is dependent on weather conditions during the hunting season and timing of the hunt. In an attempt to take advantage of these later migrations, the muzzleloader and any legal weapon hunts have been scheduled later than in previous years. The intended result was to harvest more of the migratory herd and lessen the harvest on the small resident deer populations in the area. Hunter success was down this past year during the any legal weapon season and can most likely be attributed to the extreme weather conditions present during the hunt. Snow and mud made travel in the unit very difficult. This herd has been managed as a trophy area in the past and with current challenges such as the reduction of winter range, the recommended tag quota will remain conservative.

Units 101 - 108: Southern Elko and Northwestern White Pine Counties

Report by: Caleb McAdoo

Harvest Results

The long-term average hunter success for the early any legal weapon season was approximately 25%. For 2010, the hunter success was 23%, down from 26% in 2009. The late season hunter success typically varies with weather conditions. Both snow fall amount and timing play a key role in late season hunter success, which is typically over 50%. However, the 2010 late season hunter success was only 44%, up slightly from 42% in 2009. The hunter success for the resident any legal weapon antlerless hunt was 49% yielding a harvest of 140 antlerless mule deer. For specific 2010 hunting season results, please refer to Harvest Tables in the Appendix Section.

Survey Data

An aerial post-season herd composition survey was conducted in November 2010 and 9,487 deer were classified. This was the highest fall deer survey in terms of numbers of deer observed ever recorded in Area 10. The age and sex ratios derived from this survey were 30 bucks:100 does:51 fawns. The observed young:adult ratio derived from this survey was 39 fawns:100 adults. A spring helicopter survey was conducted in March 2011. During this survey, 7,766 deer were classified yielding a ratio of 27 fawns:100 adults. This was down 4 fawns:100 adults from last year's spring survey and down 12 fawns:100 adults from the November 2010 survey which equated to a 31% over-winter fawn loss.

Habitat

Area 10 was spared from catastrophic wildfires in the summer of 2010; however, some very small acreage fires did occur. Spring and summer precipitation created favorable summer range conditions. Snow pack levels and moisture content for the winter of 2010-2011 continue to be well above average as of April, 2011. The winter of 2010-11 was relatively mild in the northern portions of Area 10, however; the southern winter ranges received heavy snow accumulation and are likely the main driver in the decreased over-winter fawn survival.

The Department of Wildlife, along with land management agencies, has begun working on several large-scale mule deer habitat enhancement projects in Area 10. One such project, the Overland\Big Wash pinyon-juniper thinning project, was initiated in the vicinity of Overland Pass to improve mule deer winter and transitional range by setting back the successional stage of the area to a more browse dominated site.



This effort will also increase wildlife diversity and reduce the potential of catastrophic wildfires by reducing the fuel load. The Overland Pass area is, and has been, an extremely important winter and transitional range for thousands of mule deer that reside in Management Area 10. Initial efforts will be aimed at conducting pinyon and juniper thinning on approximately 3,500 acres within the project boundary.

Population Status and Trend

The Area 10 population continues to account for approximately 20% of the statewide mule deer population and acts as a stronghold for Nevada's deer population. Generally speaking, the Area 10 deer herd has been stable with the exception of an unprecedented growth period in the late 1980's and a winter-related die-off during the 1992-1993 winter. Recovering from the mortality loss during the 1992-1993 winter, Area 10 was in an upward growth trend from 1997 through 2007. In 2008, the herd began to stabilize near the current population level. Good age class representation continues to be observed throughout the buck segment of the population and hunters should continue to see many mature bucks. In 2010, 39% of the buck harvest was reported as having 4 points or better and the hunter success in Area 10 continues to be over the 10-year average of 34%, but below the statewide average of 40%. Barring extreme weather conditions or catastrophic wildfires, we should continue to be optimistic about future trends of the Area 10 Deer Herd.

The Department of Wildlife continues to place a large emphasis on the State's mule deer populations by investing time and resources into beneficial projects and research which are scientifically sound and which further our understanding of the population dynamics of our mule deer resources. During the 2010-2011 winter, the Department of Wildlife, in cooperation with the University of Nevada, Reno, initiated a mule deer migration and survivorship study in areas, 10, 15, and 19. The project is aimed at identifying age and sex specific mortality rates; defining summer, winter, and transitional ranges which will help to prioritize population enhancement projects; and to determine the costs and benefits of differing mule deer migration strategies.

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

Survey Data

Post-season herd composition data was not collected in fall of 2010. The spring 2011 survey was done in conjunction with the winter elk survey in late February and early March. Survey conditions were good in most areas but not as good as the excellent conditions experienced in the spring of 2010. Weather conditions were also a limiting factor in 2011. A sample of 1,589 deer yielded a ratio of 25 fawns:100 adults. The spring 2010 sample of 2,653 deer also yielded a ratio of 25 fawns:100 adults. 2011 marks the fourth consecutive year with below-average recruitment for this unit-group. The long-term (1979-2010) average observed fawn recruitment is 33 fawns:100 adults.

Habitat

Habitat and climatic conditions have been challenging for mule deer over the past 4 years. In 2007 and 2008, April through July precipitation totals of 47% and 28% of normal contributed substantially to the low fawn recruitment documented in 2008 and 2009. Spring fawns per 100 adults of 19 and 20, respectively, for 2008 and 2009 were among the lowest on record. Higher levels of precipitation in the summer of 2009 brought short-term habitat improvements following 2-1/2 years of severe drought. The winter of 2009-10 was the most severe since the winter of 1992-93. Total snowfall in the Ely area was more than twice the average. Persistent cold temperatures prevented any significant periods of moderation. A cold, snowy 2010 spring was followed by a dry summer with only 35% of normal moisture falling over the June-Sept period. Good vegetative growth in June cured rapidly, which limited nutrition available to deer. The recent winter brought cold and snowy conditions in November and record snowfall in December. Extreme snow-cover was punctuated by some periods of moderation in late January and February. Otherwise, the past winter could have been catastrophic for mule deer. At over 10 inches, the current water-year



precipitation total for Ely already exceeds the annual average and stands among the highest on record for early April. The April 1 snow-water content for Eastern Nevada was measured at 146% by NRCS. April 1 water-year precipitation totals at local Snotel sites average 170%. This incredible moisture will result in improving cover, nutrition and water distribution in the short term.

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 fires or severe drought has resulted in loss of native vegetation and expansion of cheatgrass and noxious weeds. Numerous habitat projects, completed and planned, have the potential to benefit mule deer within this unit group. These include a chaining and water developments (2) in Unit 112, a large upcoming habitat project on USFS land in Unit 111, and hopefully a large project on the east Schell Bench of Unit 111 to reestablish native shrubs, forbs and grasses in crucial deer winter range.

Population Status and Trend

This deer population has declined over the past 4 years. Climatic and habitat conditions have had a negative effect on mule deer condition, productivity and fawn recruitment. The present outstanding moisture situation should translate into improving body condition in 2011. The strength of fawn production in 2011 may be limited by the past dry summer and another tough winter; however fawn survival in 2011 should be enhanced. The revised population model indicates a stable population trend over the past year; however, a revision of survival rates for recent years resulted in a 2011 base population estimate that is 10% lower than last year's estimate. Tag quotas in 2011 should be similar to 2010 levels.

Units 114 - 115: Snake Range; Southeastern White Pine County

Report by: Curt Baughman

Harvest Results

Tag quotas and harvest have been much lower over the past two seasons. Buck quotas (including youth) totaled 277 and 292 tags in 2010 and 2009 respectively following 491 tags in 2008 and 511 tags in 2007. Hunter success in the early rifle hunt improved from 21% in 2009 to 31% in 2010. Average-hunter success for all buck-only hunts improved from 22% in 2009 to 30% in 2010. At the current smaller size of this deer herd, the presence of Great Basin National Park is having a greater influence on hunter success rates than has been experienced in the past. Hunting is not permitted in the Park, which covers about 120 square miles of Unit 115. With fewer deer in the current population, the presence of Great Basin National Park is limiting hunter success to a greater degree than in the past. The Park contains much of the quality summer and fall habitat within Unit 115. Unless they are moved by early snows, many deer remain within the Park boundaries and are not available to hunters.

Survey Data

Post-season herd composition data was not collected in the fall of 2010. The spring 2011 aerial survey was flown in conjunction with the winter elk survey in early March. Survey conditions and coverage were both above average. A sample of 530 deer was classified with a ratio of 17 fawns:100 adults. In spring 2010 a sample of 584 deer was classified yielding a ratio of 21 fawns:100 adults. The previous 10-year-average (2000-2009) observed recruitment was 28 fawns:100 adults.

Habitat

Following 2 years of severe drought, habitat conditions improved in 2009 in response to above average precipitation. The increased moisture improved nutrition, cover, and water distribution for mule deer. The winter that followed was severe, with twice the average snowfall and consistently cold temperatures that resulted in an extended period of snow-cover for this unit-group. Most ground was covered with snow for 3 months. Below-average temperatures and above-average snowfall extended through May 2010. A dry summer followed in which only 35% of average moisture was measured at Ely during the June-



September period. The lack of summer precipitation limited the ability of deer to recover from the long 2009-10 winter. Winter returned quickly with both November and December setting records for snow. Both months registered low temperatures of -20°f. December also broke the record for total precipitation. The severe snow conditions that developed could have been catastrophic for mule deer were it not for a period of moderation that came in late January and February. Generous amounts of precipitation have continued through the late winter and spring. As of mid-April the current water-year precipitation total for Ely already exceeds the annual average and stands among the highest on record. Snow course and Snotel data for eastern Nevada indicate nearly 150% for snow-water content and 170% for water-year precipitation. A new (2010) Snotel facility located at 10,000' within Great Basin National Park has recorded 37 inches of precipitation on the water-year. The prospects for improved habitat conditions in 2011 are excellent. The current water situation will help to mitigate the habitat degradation that has occurred due to frequent drought over the past 15 years.

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, recurrent 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, 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

Since 1999 this unit-group has experienced below-average fawn recruitment in all but 3 years. The population trend was downward from 2001 to 2005 followed by some recovery between 2005 and 2007 and then another decline since that time. The negative climatic conditions described above have lowered mule deer survival and productivity, resulting in 4 consecutive years of below-average fawn recruitment. The base population estimate for 2011 is 8% lower than the 2010 estimate. Improved cover, forage and water distribution should result in improved fawn survival in 2011 and stabilize the population trend. More importantly, the anticipated improvements in habitat conditions raise the potential for deer to improve body condition and future reproductive potential. This unit-group continues to support a high buck:100 doe ratio and 2011 quotas should be similar to last year's quotas.

Unit 121: North Egan, Cherry Creek Ranges; White Pine and Elko Counties

Report by: Scott Roberts

Survey Data

The Unit 121 aerial post-season deer survey was conducted in December of 2010 in conjunction with the Unit Group 104,108,121 elk survey. A total of 1,553 deer was classified resulting in age and sex ratios of 20 bucks:100 does:56 fawns. This was the highest observed fawn ratio in this unit in 11 years. The buck ratio was likely biased low because of the tree density in this unit and the cautious nature of bucks.

An aerial spring mule deer survey was conducted during March 2011. A total of 1,434 deer was classified in Unit 121, yielding a ratio of 35 fawns:100 adults.

Habitat

The winter of 2010-11 has produced well above average precipitation in Eastern Nevada (National Weather and Climate Center website) which should have positive effects on the deer habitat in Unit 121. Normal to above-normal spring and summer precipitation could further enhance habitat conditions in Unit 121.

Proposed wind-energy projects within Unit 121 have the potential to negatively affect the deer herd and other wildlife. These projects will likely increase the human presence in much of Unit 121's most productive summer range, as well as increase traffic in and out the area. Pinyon/Juniper encroachment



continues to plague a significant portion of Unit 121. Habitat improvement projects and small fires in the unit are creating improved habitat.

Population Status and Trend

Following extensive aerial surveys this winter the population estimate is very similar to last year. If moisture regimes continue to be normal or above normal, improved range conditions could cause a favorable response in the deer herd.

The 2011 hunting season will be the first time that a limited quota of late season archery tags will be available in Unit 121. All other quota recommendations should be similar to last year's.

Units 131 - 134: Southern White Pine, Eastern Nye and Western Lincoln Counties

Report by: Mike Podborny

Survey Data

The post-season herd composition survey was conducted in December 2010 by helicopter. There were 691 deer classified; yielding ratios of 27 bucks:100 does:56 fawns. The previous post-season survey was conducted by helicopter in January 2007 with 460 deer classified; yielding ratios of 31 bucks:100 does:60 fawns. The spring survey was conducted by helicopter in March 2011. There were 1,529 deer classified; yielding a ratio of 34 fawns:100 adults. This compares to the spring 2009 survey of 1,215 deer classified with a ratio of 36 fawns:100 adults. This was the highest spring sample since 1989. The abundant snow that covered all mountain ranges forced deer to low elevations along the migration trail making them readily accessible during the spring survey. The post-season and spring surveys covered the same areas of the White Pine Range, Douglas Hills, Horse Range, Grant Range and Golden Gate Range.

Habitat

Habitat conditions improved in 2009 and 2010 with above-average precipitation resulting in increased forage production and water availability for wildlife following the drought of 2007 and 2008. The long-term quality and quantity of summer ranges are slowly being reduced by pinyon/juniper forests taking over brush zones thereby 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 this deer herd. In the summer of 2010, the Forest Service hired contract crews with chainsaws to cut small pinyon and juniper trees encroaching into open grass and brush zones of the White Pine Range. This project will be ongoing for several years and will prevent tree domination of some brush communities, maintaining their value for deer and other wildlife into the future.

Population Status and Trend

The abundant snow in the mountains concentrated deer on low elevation spring ranges along the migration trail in Units 132 and 133 and made them readily available for classification in the spring. The spring sample was the highest in 22 years and the deer appeared healthy. Both the reported harvest and the buck ratio were above expected indicating the buck segment and/or the entire population was underestimated in 2010. The moderate spring recruitment in 2011 resulted in a small population increase for the second consecutive year.

Units 141 - 145: Eureka and Eastern White Pine Counties

Report by: Mike Podborny

Survey Data

A helicopter spring survey was conducted in March 2011 with 1,383 deer classified; yielding a ratio of 34 fawns:100 adults. In March 2010 the spring survey resulted in 1,133 deer classified; yielding a ratio of 32 fawns:100 adults. In 2008 and 2009 the spring surveys resulted in fawn to adult ratios of only 19:100 and



21:100 respectfully. The last post-season survey was conducted in December 2009 with 866 deer classified yielding ratios of 35 bucks:100 does:58 fawns.

Habitat

Habitat conditions improved in the short-term in 2009 and 2010 with record precipitation in June 2009 and slightly above average precipitation in 2010. This was preceded by consecutive years of drought in 2007 and 2008. Over the long-term deer habitat is being reduced by pinyon/juniper forests crowding out the highly productive mountain brush zones and a browse community that is maturing and becoming less productive. The Bootstraps Crew run by the University of Nevada and the BLM with funding from NDOW, NBU and others used chainsaws to cut down pinyon and juniper trees over several thousand acres on Roberts Mountain in 2008 and 2009. The trees were encroaching into the important brush communities used by mule deer and a continuation of the project will occur in the Sulfur Spring Range in 2011. There were no major wildfires in 2010. The last major wildfire that negatively impacted mule deer habitat occurred in 2007 in Units 141 and 142. 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. There were 1,099 feral horses counted during the spring survey with 661 horses in Unit 141 the Cortez Range and 438 horses in Unit 144 the Diamond Range. A coyote removal project funded through the Wildlife Heritage account was conducted in the Diamond Range, Unit 144. Wildlife Services killed 106 coyotes over several days in January and March 2011 with the aid of a helicopter.

Population Status and Trend

The drought of 2007 and 2008 resulted in record low spring fawn recruitment. Therefore, the population was adjusted downward in 2010 by using lower survival rates in the computer model. The 2-year drought was broken with above-average precipitation in the late spring and early summer of 2009 and 2010. The 2011 spring survey conditions were excellent with abundant snow in the mountains concentrating deer at lower elevations and the sample size increased in 2011. The 2010 and 2011 spring fawn recruitment rates increased to moderate levels and resulted in an increasing population trend in 2011.

Units 151, 152, 154, 155: Lander and Western Eureka Counties

Report by: Jeremy Lutz

Harvest Results

The 2010 Resident Any Legal Weapon Hunt was split with an early and late hunt in 2007. In 2010, the number of first choice applicants for the early and late hunts was 386 and 141, respectively. The odds of drawing a tag in the early hunt were 3 to 1 compared to 8 to 1 for the late hunt. Early season hunter success was 50% with 34% of the harvest 4-point or better. Late season success was 63% with 75% of the harvest made up of 4-point or better bucks. For specific 2010 hunting season results, please refer to Harvest Tables in the Appendix Section.

Survey Data

Post-season aerial composition flights were conducted in November 2010 and included the Battle Mountains, Fish Creeks, Shoshones, Simpson Parks and North Toiyabes. There were 1,572 deer classified during the survey; yielding ratios of 37 bucks:100 does:73 fawns which was the highest sample ever recorded in Management Area 15. The previous post-season survey was conducted in the fall of 2009 which resulted in 1,177 deer being classified; yielding ratios of 30 bucks:100 does:60 fawns.

Aerial spring surveys were conducted in March 2011. Areas surveyed were the Shoshones, Toiyabes and the Simpson Park mountains. The Battle Mountains and Fish Creeks were not surveyed due to time constraints. A sample of 723 deer was classified; yielding a ratio of 49 fawns:100 adults. The previous year's survey was conducted from the ground in March 2009. A sample of 807 deer was obtained; yielding a ratio of 41 fawns:100 adults.



Habitat

Habitat conditions for deer in Area 15 continue to improve over the long-term. The Battle Mountain BLM is currently working on the last remaining allotment evaluation, which when implemented should have positive results for mule deer in Management Area 15. The BLM continues to be aggressive with controlling or removing feral horses that are above Appropriate Management Level (AML) in Management Area 15. A total of 387 feral horses was removed and another 274 were administered fertility control drugs.

Lander and Eureka counties received above average precipitation over the last 3 years resulting in better range and forage conditions for mule deer. With the increase of quality forage, mule deer were in optimal body condition going into the winter and subsequently very little winter mortality was documented.

Since 1999, over 440,000 acres have burned in Lander and Eureka counties. With 11 years of recovery much of the upper elevation burns have shown great improvement with shrubs and native grasses pioneering back. This early succession appears to have been very productive and beneficial for mule deer.

Population Status and Trend

The Area 15 deer population experienced another relatively mild winter which resulted in a high fawn to adult ratio of 49 fawns:100 adults this spring. The Area 15 deer population has responded well to the increased moisture. This population is still below carrying capacity and if the moisture pattern continues this population will continue to respond positively. The 2011 deer population estimate for Area 15 is approximately 4,100 adults which is 13% higher than last year's estimate.

Units 161 - 164: Northcentral Nye and Southern Lander and Eureka Counties

Report by: Tom Donham

Harvest Results

2010 was the fourth consecutive year of the Any Legal Weapon early/late split mule deer hunt. In 2007, the season changed from a single 23-day season to a split 16-day early/late season for both Management Area (MA) 16 and 17. The split season is intended to allow those willing to deal with larger crowds and comparatively more difficult hunting conditions, a greater chance of obtaining a deer tag on a regular basis, while at the same time offering a later hunt in the fall with significantly smaller crowds for those sportsmen willing to wait longer between deer tags.

Over the past four years, the MA 16 early Resident Any Legal Weapon season success has averaged 43%, while the late Resident Any Legal Weapon season success has averaged 61%. During the same four year period, the average harvest percentage of 4-points or better during the early and late seasons has been 33% and 62%, respectively.

Survey Data

No post-season composition surveys were conducted in MA 16 during the 2010 survey period. During a spring composition survey in late March 2011, a total of 1,181 deer was classified as 966 adults, and 215 fawns. The very low observed fawn/100 adult ratio is due to a combination of factors. First, it is likely that unusually heavy snow accumulations in December 2010 resulted in higher than average fawn mortality during that period. The other contributing factor is actually a positive one. 2009 saw very high mule deer production and recruitment rates in central Nevada, which resulted in an extraordinarily high number of yearling deer being present in the population this past year. The large number of yearling does, likely lowered the observed fawn ratio seen this spring. The previous spring composition survey was conducted in March 2010, when a total of 1,215 deer was classified as 900 adults and 315 fawns.



Population Status and Trend

The MA 16 mule deer population has remained fairly static for a number of years. Very dry conditions have plagued central Nevada in most years of the last decade, and this, in combination with various other factors, has resulted in less than optimal habitat conditions and herd productivity. Fortunately, favorable climatic conditions experienced during parts of 2008 and continuing throughout 2009 resulted in a boost in production and recruitment rates, which allowed for a moderate increase in mule deer populations in central Nevada.

Despite the very low observed recruitment rates seen in the spring of 2011, the short-term outlook for mule deer populations in central Nevada is good. Good moisture receipts through March and early April should help habitat conditions continue to improve, which in turn will benefit all wildlife species in central Nevada.

Due to record low production and recruitment experienced by mule deer in central Nevada in 2007-08, the segment of the population which will be four year old deer in 2011 is underrepresented. This situation has begun to manifest itself in a comparative lack of bucks in the age and size range that many hunters anticipate seeing, which is likely a contributor to the drop in percentage of 4-point or better bucks seen in the 2010 harvest. Currently, this cohort also represents does of the age that should be entering their prime years of productivity, which may have also contributed to the lowered production and recruitment seen this past year.

The MA 16 mule deer population is currently showing a static trend, primarily due to lowered recruitment rates. However, if conditions remain favorable, the herd is poised to see some moderate increases in the near future.

Units 171 - 173: Northwestern Nye and Southern Lander Counties

Report by: Tom Donham

Harvest Results

2010 was the fourth consecutive year of the Any Legal Weapon early/late split mule deer hunt. In 2007, the season changed from a single 23-day season to a split 16-day early/late season for both Management Area (MA) 16 and 17. The split season is intended to allow those willing to deal with larger crowds and comparatively more difficult hunting conditions a greater chance of obtaining a deer tag on a regular basis, while at the same time offering a hunt later in the fall with significantly smaller crowds for those sportsmen willing to wait longer between deer tags.

Over the past four years, the early Resident Any Legal Weapon season success has averaged 29%, while the late Resident Any Legal Weapon season success has averaged 42%. During the same four year period, the average harvest percentage of 4-points or better during the early and late seasons has been 30% and 49%, respectively.

Unlike Area 16, which has better road access, the comparative success of the Area 17 late hunt depends more on cooler temperatures and/or sufficient precipitation to make deer more accessible for harvest.

Survey Data

Post-season aerial composition surveys were not conducted in MA 17 during the reporting period. A spring aerial composition survey was conducted in late March 2011. During the 2011 spring survey, a total of 1,046 mule deer was classified as 832 adults and 214 fawns. Similarly to MA 16, heavy snow loads during December 2010 likely resulted in somewhat higher than average fawn mortality during that period. In addition to increased fawn mortality, a very high number of yearlings does present in the population also played a part in the low observed fawn/100 adult ratio. Very good production and recruitment rates seen in 2009-10 resulted in a high number of yearling deer in the population which did not promote fawn



production in 2010. The previous spring composition survey was conducted in March 2010 and a total of 668 deer was classified as 478 adults and 190 fawns.

Population Status and Trend

Very good production and recruitment rates seen during 2009-10 resulted in a modest increase in central Nevada deer populations in 2010. However, lowered recruitment rates experienced by the herds in 2011 were only enough to allow for population maintenance at last year's level.

Despite recent low recruitment rates, the short-term outlook for the MA 17 deer population is good. Favorable climatic conditions over much of central Nevada during March and early April should benefit a variety of wildlife species and their habitats. If conditions remain favorable, the MA 17 mule deer population could be poised to show another increase in the near future. Unfortunately, for over a decade now, climatic conditions in central Nevada have remained unfavorable for significant stretches of time.

Due to record low production and recruitment experienced by mule deer in central Nevada in 2007-08, the segment of the population which will be four year old deer in 2011 is underrepresented. This situation has begun to manifest itself in a comparative lack of bucks in the age and size range that many hunters anticipate seeing, which is likely a contributor to the drop in percentage of 4-point or better bucks seen in the 2010 harvest. Currently, this cohort also represents does of the age that should be entering their prime years of productivity, which may have also contributed to the lowered production and recruitment seen this past year.

Currently, the MA 17 mule deer population is considered stable at a level similar to that of the previous year.

Units 181 - 184: Churchill, Southern Pershing and Western Lander Counties

Report by: Jason Salisbury

Survey Data

A ground survey was conducted in the spring of 2011, resulting in the classification of 78 mule deer. This sample consisted of 56 adults and 22 fawns, yielding a ratio of 39 fawns:100 adults. Areas surveyed within the Area 18 herd include the Stillwater Range and Lahontan Valley.

Habitat

The mule deer herd in Management Area 18 continues to endure increasing encroachment by pinyon and juniper into sagebrush habitats. The browse component that does exist in the pinyon and juniper is senescent and would require manipulation to improve quantity and quality. Above average precipitation during the winter of 2010-2011 will result in better range conditions for spring of 2011.

The Big Den project is nearly complete and occurs on the western slope of the Desatoya Mountains. This particular project is 2,700 acres and will target pinyon and juniper removal for the benefit of mule deer and sage grouse. This project will utilize ground crews to remove individual trees as well as a mechanical masticator. This opening up of the canopy should allow for improved flow around spring sources as well as increase the overall browse community.

This past summer, the Clan Fire consumed close to 1,000 acres of pinyon and juniper in the Star and Florence drainages of the Clan Alpine Mountains. During the winter of 2010, the BLM seeded the fire with a grass and shrub mix. Past fires that have occurred in Area 18, have had a positive response from mule deer, especially if the fire occurred in a woodland area.



Population Status and Trend

The mule deer population within Management Area 18 has remained stable due to the recruitment level. The 2010 hunter data indicates that 40% of the bucks harvested were 4-points or better. This is consistent with the ten year average of 38%, 4-point or better bucks within the harvest. The buck segment of this population is well represented by all age classes and hunters will have the opportunity to find mature bucks within this population. For 2011, the season dates were extended to November 5th which should allow for increased hunter harvest in Management Area 18.

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

Survey Data

A post-season survey flight took place in January 2010. Survey results were fair and very similar to last year with 362 deer classified yielding ratios of 20 bucks:100 does:59 fawns. The spring survey was flown by California biologists during March resulting in 142 deer classified and a ratio of 38 fawns:100 adults. Winter fawn loss was estimated at 23%. Observed buck ratios were routinely low but point-class distribution in the harvest indicates a higher percentage of bucks in the population than what is observed during surveys. The majority of deer surveyed in Unit 192 were found in the northern part of the unit.

Habitat

There were no significant changes to the habitat in 2010 occupied by this deer herd. The majority of this herd uses the eastern slopes of the Carson Range as critical winter range, migrating over from California summer range, but there is a portion of the herd that remains in Nevada year-round as resident deer. Urbanization along the Carson Front has encroached upon winter range traditionally used by the Carson River deer herd and this permanent loss of habitat is the single most important issue facing deer herds in the Carson Range. This loss is recognized not only as a direct loss of available habitat but also a loss of stress-free space - free from human recreational activities, as well as loss of thermal cover. Habitat that remains above the home-line is in fairly good condition.

Population Status and Trend

The pre-hunt population estimate is between 900-1000 animals. Survey and harvest data indicate this deer herd probably maintained itself over the last year and is stable. Fawn production and recruitment rates have been within or above expected maintenance levels.

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

Survey Data

Biologists completed a late post-season composition survey flight in early January 2010 and classified 569 deer yielding ratios of 18 bucks:100 does: 50 fawns. California biologists flew spring surveys in March 2011 classifying 169 deer yielding a ratio of 39 fawns:100 adults. Survey results were very low but it was noted that the weather conditions prevented a more thorough flight. These results show winter fawn loss of 23%. Typical of the Carson Front units, the buck point-class distribution was indicative of a buck segment in the population higher than that observed during surveys. Similar to past surveys, the majority of deer in Unit 194 were 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.



Habitat

Housing developments and the accompanying associated human recreation are the most important issues facing the Carson Front deer herds. Although there were no noteworthy fires or other catastrophic habitat changes in 2010, there have been recent fires in Units 194/196 which have had significant impacts on the landscape. The damage to mule deer winter range caused by these fires is exacerbated by the expanding urban interface.

Population Estimates and Trend

Based on fawn production and winter survival, this deer herd (the Loyalton-Truckee/Verdi Interstate herd) is probably near carry capacity, as it has been for the past two decades. The population limit placed on this deer herd by human encroachment/development is decreased regularly because of the decline in available winter range.

The 2011 pre-hunt population estimate is around 1400 animals, 20-30% of which are deer resident to Nevada. Over the last few years this deer herd has appeared healthy with adequate fawn recruitment rates and generally good age class distribution. Despite this, the long-term population trend is downward, mostly due to habitat loss and fragmentation, and is mirroring the decrease in carry capacity. With high success rates and good point-class distribution, this unit remains a much desired area to hunt by both locals and non-residents.

Unit 195: Virginia Range Herd; Storey, Washoe and Lyon Counties

Report by: Carl Lackey

Survey Data

Formal post-season and spring surveys have not been conducted for Unit 195 since 2002.

Habitat

The majority of land in this unit is privately owned and therefore difficult to manage for wildlife. Additionally, a significant portion of the private land is being developed, commercially and residentially. The resulting fragmentation and loss of habitat, along with increased traffic on U.S 395 has decreased this once migratory herd to a resident herd.

Population Estimates and Trend

There is no modeled population estimate for this herd. The population estimate for this deer herd is derived solely from harvest statistics. A population estimator based on total buck harvest derived from a Colorado Department of Wildlife model was used to generate an estimate of 500 deer. The population estimate is thought to be stable at this time. Deer are fairly common along the Truckee River corridor on mostly private lands. Hunter success indicates an adequate number of deer to support tags sold.

Units 201, 202, 204 - 206: Walker / Mono Interstate Deer Herd; Douglas, Lyon, and Mineral Counties

Report by: Jason Salisbury

Survey Data

Post-season aerial surveys were completed by the Nevada Department of Wildlife in early January 2011 and resulted in the classification of 1,864 mule deer. This sample consisted of 283 bucks, 1,110 does, and 471 fawns for a ratio of 26 bucks:100 does:42 fawns.



Spring aerial surveys were conducted by California Fish and Game personnel in late March 2011 and resulted in the classification of 817 deer, consisting of 556 adults and 261 fawns yielding a ratio of 47 fawns per 100 adults.

Habitat

Precipitation for the Area 20 herd improved substantially in 2010-2011 and will allow for increased vigor in browse and grass communities. The Area 20 herd is broken up into two distinct wintering groups made up of the East and West Walker herds. The East Walker herd occupies the Pine Grove Hills and the West Walker herd occupies the Sierra Front and Wellington Hills. The East Walker herd winter range consists primarily of pinyon juniper woodlands. This winter range receives limited moisture resulting in a degraded browse community. The West Walker herd experiences colder temperatures and increased snow depth resulting in added fawn mortality.

Past wild fires such as the Jackass Flat Fire that consumed 5,394 acres in 2006, have recovered well. Many large groups of wintering mule deer are utilizing the burned area for the new growth of brush species as well as grasses and forbs.

Presently, sagebrush habitats are consistently being converted to pinyon and juniper woodlands resulting in a loss of important browse communities. Reducing the pinyon and juniper woodland densities will allow for a positive response in brush communities. Presently, a migration corridor exists in the Wellington Hills area, Unit 201, and does allow mule deer to migrate through to their respective winter ranges. However, due to increased urbanization, migratory corridors are slowly being consumed as a result of this development.

Population Status and Trend

Aerial spring composition surveys conducted in March 2011 by California Department of Fish and Game recorded a 35% increase of fawns compared to January surveys conducted by the Nevada Department of Wildlife personnel. Inconsistencies over the last three years between Nevada and California surveys have resulted in large differences between fall and spring data. Two varying survey techniques are being employed by the two states. Nevada uses a directed search method while California Department of Fish and Game uses a line transect technique. Given that these two techniques produced differing fawn ratios, the 2011 fawn recruitment rate was reduced in the population model to average out the variances that occurred between the two surveys. Nevada will be looking at conducting spring surveys in 2012 to capture data that can be incorporated in our population model.

Hunter success for these units has averaged 60% over the last five years. The pre-hunt adult deer population estimate for the Walker River interstate herd is approximately 5,600 animals. Nevada's apportionment of the herd is approximately 30% based upon the percentage of the herd that occupies winter range in Nevada. Harvest objectives are then distributed between Unit groups 201 & 204 and Unit groups 202, 205, and 206.

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

Survey

Spring surveys were conducted in March of 2010, and resulted in the classification of 72 deer consisting of 54 adults and 18 fawns yielding a ratio of 33 fawns:100 adults. Areas surveyed include the Mason Valley Wildlife Management area and agricultural areas within Smith Valley.

Population Status and Trend

Mule deer habitat is limited within Mason and Smith Valley. It is being threatened by an increasing trend of converting native habitats into onion and garlic fields. Without adequate thermal and escape cover this



mule deer population cannot maintain its current population level. Furthermore, ongoing housing development and infrastructure within Mason and Smith Valley have impacted this population. The mule deer population that inhabits the Mason Valley Wildlife Management Area is exhibiting a decreasing population trend due to the conversion of alfalfa fields into onions and wheat.

The mule deer herd that occupies Mason and Smith Valley has declined from what was observed in the 1990's. The 1331 any legal weapon hunt is an indicator of stability. The 2010 overall hunter success rate was 43% and 4-point or better bucks harvested were 32%. Both hunter success rates and 4-point or greater percentages are slightly below their 10-year averages of 48% hunter success and 36% of 4-point or better bucks harvested for all hunts.

Units 211, 212: Esmeralda County

Report by: Tom Donham

Survey Data

Currently, no formal surveys are conducted in Management Area 21 (MA 21). Past survey efforts have not resulted in sufficient sample sizes for use in monitoring population dynamics.

Population Status and Trend

Based upon harvest data, random observations, and informal surveys, the MA 21 mule deer population has remained at relatively low levels for quite some time. Since the late 1990's, very dry conditions experienced in most of the last several years have impacted production and recruitment rates throughout much of Esmeralda County. In addition, conversion of sagebrush habitats to pinyon and juniper woodland as well as the loss of productivity of browse species due to aging has impacted the amount and quality of available habitat.

Considering the lowered recruitment rates seen in other herds in central Nevada in early 2011, the MA 21 population is expected to have experienced the same. This, in conjunction with a drop in hunter success in 2010, has resulted in a slight decrease in the MA 21 population estimate. Recent favorable climatic conditions are expected to help improve the productivity of wildlife habitats in the area, and the mule deer population in Esmeralda County should benefit, at least in the short term. Presently, the population estimate is approximately 300 adult animals.

Units 221 - 223: Northern Lincoln and Southern White Pine Counties

Report by: Mike Scott

Survey Data

No post season aerial surveys were completed during the reporting period. Spring surveys were conducted in March 2011 and resulted in the classification of 2,117 deer consisting of 1,567 adults and 550 fawns which results in a ratio of 35 fawns per 100 adults.

Habitat

Mule deer in Area 22 have multiple habitat related challenges ahead. Large expanses of the area are covered by dense pinyon-juniper forest which offers little forage for mule deer. A large power line is planned that will cut through mule deer winter range and migration corridors. A wind energy project is proposed in crucial deer winter range, and a large solar energy project is proposed adjacent to crucial deer winter range. Water is still being proposed for transfer out of the area as well. The Silver State Trail continues to attract OHV users to crucial deer winter range and through migration corridors. BLM removed a portion of the feral horses that had decimated much of the mule deer habitat in the fall of 2010. Unfortunately, this was done during the mule deer hunting season, disrupting both deer and deer hunters. Even though the numbers of feral horses still exceed the AML, any reduction in feral horses should benefit



mule deer. Above average precipitation during 2010 should result in good range conditions during the spring of 2011.

Population Status and Trend

The population is estimated at approximately 4,000 adult animals.

Unit 231: Wilson Creek Range; Northeastern Lincoln County

Report by: Mike Scott

Survey Data

No post-season aerial surveys were conducted during the reporting period. Spring surveys were conducted during March 2011 and resulted in the classification of 1,022 deer consisting of 737 does and 285 fawns, which provides a ratio of 39 fawns per 100 adults.

Habitat

Mule deer in Area 23 do not have much to smile about. The largest threat is a proposed large-scale wind energy project located in the worst possible place for mule deer. Table Mountain and Mount Wilson hold the bulk of the high elevation fawning and summer habitat for mule deer, as well as elk and sage grouse. This potential disaster for wildlife is being promoted by the federal government and a proponent who simply wants to exploit the resource. There are many other wind energy suitable places in Area 23 that could be used without destroying important wildlife habitat. Multiple other threats to mule deer habitat include continued pinyon-juniper expansion, shrub senescence, shed antler hunters, water transfers, and development in crucial mule deer winter range. The BLM gathered 850 feral horses in Area 23, but the number of horses remains well above the AML. Still, any reduction in feral horses should benefit wildlife. Two water developments were constructed using largely volunteer labor that will also benefit mule deer. Several other water developments are scheduled for construction in the near future that will also be beneficial to mule deer and other wildlife. Above average precipitation during 2010 should result in good range conditions for mule deer during the spring of 2011.

Population Estimates and Trend

The population is stable compared to last year with a 2011 population estimate of 3,100 adult mule deer.

Units 241 - 245: Clover, Delamar, and Meadow Valley Mountain Ranges; Lincoln County

Report by: Mike Scott

Survey Data

No post-season aerial surveys were conducted during the reporting period. Spring surveys were conducted in March 2010 and resulted in a total of 380 deer observed. Of these, 289 were classified as adults and 91 classified as fawns which provides a ratio of 31 fawns per 100 adults.

Habitat

Habitat conditions should be good during the spring of 2011 due to above average precipitation during 2010. Burned areas continue to recover from wildfires. BLM completed a large chaining in Unit 242 that will likely be beneficial for mule deer and other wildlife. Dense pinyon-juniper forest throughout much of this area limits the amount of forage available for mule deer. Feral horses, that obviously damage mule deer habitat, are observed in very high numbers throughout units 241 and 242 despite BLM reducing the AML to zero. Several new water developments are scheduled for construction that should benefit mule deer and other wildlife.



Population Estimates and Trend

The 2010 population estimate is 850 adult animals.

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

Management Area 25 (MA 25) has a limited amount of good quality mule deer habitat. The greatest amount and best quality habitat, and therefore the majority of the deer population in MA 25, occurs in Unit 251. Due to; regularly occurring drought periods, impacts from excessive numbers of feral horses, pinyon and juniper expansion, and aging of browse species, the mule deer population in Unit 251 has remained static at relatively low numbers for some time.

Mule deer populations in northern Nye County experienced lowered recruitment rates in 2011. Due to the proximity of Unit 251 to these other herds, it is expected that the same phenomenon occurred in this MA. This, in along with a drop in hunter success during the 2010 season, has resulted in a slight decrease in the MA 21 population estimate. Despite this minor setback, favorable climatic conditions experienced throughout central Nevada recently should help to improve the health and productivity of wildlife habitats, which in turn should benefit local mule deer populations, at least in the short-term. Presently, the MA 25 population estimate 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. In the Spring Mountains, mule deer habitat is also impacted by feral horses and burros.

In June 2004, the Humboldt-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 5 (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 persisted from November 2005 through November 2009. 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.

Drought conditions abated for a period of several months beginning in December 2009. In 2010, high precipitation receipts in winter and subsequent spring months resulted in increased availability of nutrient-rich forbs, browse tips, and grasses. However, in the absence of monsoonal storms, summer months in 2010 were notably dry.

As of April 2011, environmental conditions are adequate, due to winter and spring storms that occurred in late 2010 and March 2011. Thus far in 2011, precipitation receipts in January and February were below normal, and the likelihood for an overall dry year is high. In the seasonal drought outlook, the National Weather Service has not identified the likely development of drought conditions during the period April 2011 through June 2011.

Units 271, 272: Southern Lincoln and Northeastern Clark Counties

Report by: Mike Scott

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

Mule deer habitat is limited in Area 27. Better mule deer habitat is found in the Virgin Mountains; however, it is still a low density mule deer area. Both units are within Mojave Desert ecotypes with Pinyon/Juniper found at higher elevations. Water is very limited and mule deer are generally found in areas not far from water, at least during the warmer times of the year. Large-scale wildfires, which appear to be recovering, likely opened some habitat in recent years. Above-average precipitation during 2010 should result in good habitat conditions in Area 27.

Unit 291: Pinenut Mountain Herd; Douglas County

Report by: Carl Lackey

Survey Data

No formal surveys were conducted in this unit. General observations and anecdotal reports indicate this herd is stable over the short-term but has declined significantly over the long-term.

Habitat

Loss of habitat and access to available and adequate habitat in this unit continue to keep the deer population at low levels. Expansion of the pinion forest over the past few decades, increased human recreational activity and increased urbanization on the unit's 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 pinion-juniper, much of which is dead. Habitat improvement projects have been recommended to reduce pinion-juniper. Short of a significant habitat regime change affecting thousands of acres, the deer herd will not increase significantly in numbers.

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 experience a limited increase under more ideal habitat conditions. Many of the deer, particularly in the northern part of the management area, are resident deer. Based on buck harvest, the 2010 population estimate for Area 29 was 500 adult animals. It was well below historic levels recorded for



the Pinenut Mountains and may well be below carrying capacity. The loss of deer 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 local hunting opportunity with a good buck point-class and decent hunter success. This was evidenced by demand in the form of 334 first-choice applications for the 79 available resident tags.



PRONGHORN ANTELOPE

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

Harvest Results

A total of 259 buck pronghorn was harvested within management areas 1 & 2 during the 2010 hunting season. Hunter success rates for resident rifle hunters decreased in three of the four hunt units or unit groups in 2010. However, the 2010 hunter success rates that showed a decrease were within 1 to 3% of the long-term averages. The only exception was Unit 011 which was approximately 10% below the long-term average in 2010. Unit Group 012-014 was the only hunt unit that showed an increase in the hunter success rate when compared with the previous year.

Survey Data

Herd composition surveys were conducted in September 2010. NDOW biologists classified a total of 1,256 animals with sex and age ratios of 44 bucks:100 does:44 fawns. In 2009, a total of 902 animals was classified with ratios of 31 bucks:100 does:57 fawns.

Buck ratios ranged between 34 bucks:100 does in Unit Group 012-014 to a very high buck ratio of 56 bucks:100 does in Unit 015. The higher buck ratios observed in several of the hunt units were primarily due to the good to excellent recruitment observed in those units in 2009. Yearling bucks made up a remarkable 44% of the buck sample in Hunt Unit 015.

Fawn ratios varied a great deal between Washoe County hunt units this year. Fawn ratios within Unit 011 have finally dropped off after many years of good to excellent recruitment. Large lakes and reservoirs on top of the Vya Rim were completely dry during late summer 2010. The area surrounding these lakes provided important summer fawning habitat to pronghorn in Unit 011. Dry conditions and poor water availability dramatically changed the distribution of pronghorn during the summer of 2010.

The fawn ratio within Unit Group 012-014 also decreased in 2010 but remains at a level that will allow continued herd growth. The fawn ratio dropped from 57 fawns:100 does in 2009 to 40 fawns:100 does in 2010. Unit group 021-022 saw a decrease of 8 fawns:100 does when compared with the 2009 ratio but recruitment remains strong and was measured at 43 fawns:100 does.

Fawn ratios in Unit 015 have been excellent for several consecutive years and the herd continues to show a strong increasing trend. The 2010 observed fawn ratio was 62 fawns:100 does and was measured at 66 fawns:100 does in 2009.

Table 1. 2010 post-season pronghorn composition

Unit	Bucks	Does	Fawns	Total	Bucks:100 Does:Fawns
011	76	148	51	275	51:100:35
012-014	101	298	118	517	34:100:40
015	86	155	96	337	56:100:62
021-022	31	67	29	127	46:100:43
2010 Totals	294	668	294	1256	44:100:44
2009 Totals	147	481	274	902	31:100:57

Habitat

Upper elevation habitats in Washoe County have weathered the dry conditions better than many of the low lying areas. Many water sources at these lower elevations continued to suffer from reduced flows



during the summer of 2010. However, even some upper elevation areas within Washoe County were showing the effects from several consecutive dry years. A good example of this was in Unit 011 where large lakes and reservoirs such as Carter Lake were completely dry during the late summer of 2010. In the summer of 2009, water levels in these same lakes and reservoirs were very low but still provided limited water to pronghorn. It took consecutive years of below-average precipitation and snowfall to cause these larger water sources to dry completely.

The winter of 2010 started out with a bang as most basins in northwestern Nevada were well above average for both total precipitation and snowfall. The Nevada Water Supply Outlook Report showed the Northern Great Basin to be at 184% of average as of January 1, 2011 for the water year. Most other basins in western Nevada were even higher at well over 200% of average. The months of October and December set new records or came close to setting new records for snowfall and total precipitation. To compare, the Northern Great Basin was just 68% of average in 2009.

Unfortunately, the month of January 2011, was a total bust as far as the amount of moisture received, and ended up at just 39% of average for monthly total precipitation. The lack of snowfall or precipitation in general lowered the outlook from 184% of average at the beginning of the month to 141% of average as of February 1, 2011. The first two weeks of February continued to be very dry and the outlook for another average or below-average water year appeared to be possible. Fortunately, continuous storm fronts pushed through northwestern Nevada in late February and March. Significant snowfall was received from these storms and the current precipitation and snowfall totals are now well above average levels.

The BLM Twin Peaks gather removed nearly 1,500 horses and burros from within the Twin Peak Horse Management Area. The gather took place in September 2010 and will help relieve the tremendous amount of competition between wildlife and horses for forage and water. This management action will help to improve habitat conditions for pronghorn and wintering mule deer in Hunt Unit 015.

The BLM Calico Complex horse gather removed an additional 1,900+ horses from within hunt units 012 and 014. Competition at or near water sources between pronghorn and horses can be very high, especially during the hot summer months. Competition is especially high in areas that are lower in elevation and have limited water sources such as in Hunt Unit 012. The timing for the gather could not have been better, as the winter of 2010-11 provided significant moisture that will also help to improve habitat conditions.

Population Status and Trend

Recent horse gathers have helped to reduce the amount of competition between horses and pronghorn. The above average moisture receipts received this past winter and spring will also help improve habitat conditions throughout northwestern Nevada. This will result in an increase in the carrying capacity of these ranges.

Pronghorn populations within Washoe County will experience static to increasing trends in 2010-11. Populations in Hunt Unit 011, Unit Group 021-022, and Unit Group 012-014 will experience static to slightly increasing trends in 2011. The pronghorn population in Unit 015 has had very good recruitment over the past several years and the population will continue on a strong upward trend. Recommended quotas for the 2011 hunting season will reflect these trends.

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

Survey Data

Post-season aerial composition surveys were conducted in management areas 3 and 5 during the middle of September 2010. The total number of antelope observed during these surveys was up slightly from last year's total. Units 031-035 showed increases in the number of animals classified. Unit 051 was down by



approximately 50%. Pronghorn in Unit 051 were scattered and in small groups making it difficult to locate animals.

Table 1. 2010 Post-season pronghorn composition for Humboldt County

Unit	Total	Bucks:100 Does: Fawns
031	201	22:100:30
032-035	339	21:100:29
051	146	31:100:30
2010 Totals	686	23:100:30
2009 Totals	681	33:100:53

Buck and fawn ratios declined from those recorded during 2009 surveys.

Habitat

The winter of 2010-11 was relatively mild; however, significant amounts of moisture were received throughout the winter. As of April, conditions were excellent with significant amounts of moisture received during the spring. Much of the vegetation was greening up which should provide plenty of forage for pronghorn during the spring and summer of 2011.

Population Status and Trend

Population estimates for management areas 3 and 5 show a static trend when compared to last year’s published estimates. Fawn ratios observed during surveys were measured at or near 30 fawns:100 does which may not allow for population growth. Doe hunts have been in effect for two years in Management Area 3. Success rates have been good during these hunts.

Unit 033: Sheldon National Wildlife Refuge; Washoe and Humboldt Counties

Report by: Chris Hampson

Harvest Results

Sixty-nine pronghorn bucks were harvested from the Sheldon during the 2010 hunting season. The harvest objective for the Sheldon was 65 bucks. Resident rifle hunters had slightly more success on the Sheldon in 2010. The early hunting season success mimicked the 2009 success rate of 71%. The late season success rate increased from 68% in 2009 to 79% in 2010. Hunter questionnaire data show that approximately 60% of the harvested bucks from the 2010 hunting season had 15 inch horns or longer.

Survey Data

Very dry conditions and poor water availability continued to impact pronghorn on the Sheldon during the summer of 2010. Large reservoirs such as Big Springs Reservoir were completely dry. Other bodies of water such as Swan Lake and the smaller lake beds on top of many plateaus were once again completely dry by the end of summer. Due to the dry conditions that have occurred over the past several years, pronghorn distribution has changed considerably when compared with the previous five-year period. Pronghorn have had to pull off of these once well-watered areas and move to adjacent habitat that could provide better forage and more reliable water. NDOW biologists have also shifted helicopter surveys to these areas where pronghorn densities are highest.

Composition surveys were flown during the second week of September. Increased survey effort led to more animals being classified on the Sheldon this year. A total of 610 animals were classified and the sample provided composition ratios of 40 bucks:100 does:30 fawns. This was the highest number of animals classified by NDOW since 2002. However, this increase was attributable to the extra amount of

time expended surveying pronghorn. Areas surveyed included Badger Mountain, lower elevation habitat surrounding Swan Lake, Catnip Mountain, Horse Heaven and Round Mountain.

The fawn ratio of 30 fawns:100 does from the 2010 survey indicates another marginal year for recruitment of pronghorn on the Sheldon. In 2009, the composition ratio was only slightly higher at 36 fawns:100 does. Over the past five-year period, the recruitment rate for the Sheldon has averaged just 30 fawns:100 does. With some minor increases or decreases from year to year, the Sheldon pronghorn population has been generally static over this five-year period.

Buck ratios on the Sheldon remain strong and the quality of the hunting experience is excellent. The buck ratio from the larger sample was measured at 40 bucks:100 does this year. This matches the modeled ratio and was thought to be representative of the true buck ratio for the Sheldon pronghorn population.

Habitat

Dry conditions continued thru much of the summer and early fall 2010. Finally, in October northwestern Nevada received significant moisture with many areas reporting record setting precipitation. The Sheldon Snotel site on the Guano Rim received 2.8 inches of precipitation in October. Precipitation in November and December added another 1.2 and 1.8 inches of precipitation to the water year total. Unfortunately, during the month of January and the first two weeks of February only 0.6 of an inch of moisture was received. Very warm temperatures and mild conditions melted much of the snowpack. Fortunately, significant snowfall was received in late February and March. As of this writing, the current water year precipitation and snowfall totals are well-above average.

In September of 2010, Sheldon Refuge personnel conducted a horse gather in the Devaney Mountain area on the Sheldon. Another gather is planned for August of 2011. Removal of horses will help to alleviate competition with wildlife for both forage and water. Riparian areas should also benefit and slowly improve in condition as horse numbers are brought under control.

Population Status and Trend

The Sheldon pronghorn herd remains at moderately high levels despite experiencing average recruitment over the past several years. Recruitment for the Sheldon pronghorn population had averaged just 30 fawns:100 does over the past five years. The extremely dry conditions on the Sheldon were believed to be the main cause for the lower recruitment levels observed over the past several years. This level of recruitment was only sufficient to allow the herd to maintain a static overall trend.

The 30 fawns:100 does recruitment level observed this past year is expected to result in a continued static trend for 2011. However, the winter of 2010-11 finally provided significant precipitation and snowfall that will help to improve forage quality and water availability on the Sheldon. It is believed that the expected improvement in habitat conditions along with the reduction in the amount of competition from horses will lead to an increase in the carrying capacity for pronghorn and other wildlife living on the Sheldon.

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

Survey Data

Composition surveys for western Pershing County occurred in mid-September 2010 and were performed from the ground. Results are summarized in Table 1.



Table 1. Pronghorn composition survey results for Units 041 and 042.

Year	Bucks	Does	Fawns	Total	Bucks:100 Does:Fawns
2009	127	262	121	510	48:100:46
2010	92	240	104	436	38:100:43
5-year average	139	308	137	584	45:100:44

The 2010 fawn ratio remains near its five-year average, while the post-season buck ratio of 38 bucks:100 does remained high but below its five-year average.

Habitat

One big game guzzler was constructed in the northeastern portion of the Trinity Range. This guzzler will allow pronghorn to utilize the north Trinity Range and Poker Brown Wash area during the summer months.

Water sources in the western portion of Unit 041 were a concern last summer. These include Granite Springs, Sage Hen Spring, Tunnel Springs and Stonehouse Canyon in the Nightingale Range. These spring sources were routinely dry or near dry from low output and overuse from feral horses, burros and livestock. Field observations from this past summer indicated antelope numbers in these areas were lower than average, which suggests that dry to nearly dry springs and seeps caused antelope to move to other areas within the unit group. NDOW worked with BLM-Winnemucca to rectify some of these problems, in particular Sage Hen Spring. New tanks were installed at this source by the permittee. However, water output was still unable to adequately meet demand during most of the summer months.

One wildfire occurred in Unit 042 in early July 2010. This fire was called Seven Troughs and burned 3,842 acres near Poker Brown Gap/Majuba Mountain. BLM aerially seeded 1,200 acres with Wyoming big sagebrush. Many parts of this area had previously burned in 2000. This fire is not expected to negatively affect antelope use in the area.

Population Status and Trend

The 2011 population estimate for western Pershing County's antelope herd is approximately 1,700 animals. Overall, this herd has demonstrated a long-term increasing trend and has grown at a 6% rate for the last two years.

Units 043 - 046: Eastern Pershing and Southern Humboldt Counties

Report by: Kyle Neill

Survey Data

Formal antelope composition surveys in eastern Pershing County began in 2009. This initial survey effort resulted in the classification of 53 animals (59 bucks:100 does:24 fawns). The 2010 composition survey was performed from the ground for three days in early February 2011. The timing of this survey occurred when antelope were congregated in large winter groups. A total of 111 animals was observed with age and sex ratios of 55 bucks:100 does:43 fawns. Antelope were found in every unit except 045.

Habitat

A wildfire in Unit 043 occurred last summer in Indian and Cottonwood canyons. This fire consumed 1,571 acres and burned mostly in Indian Canyon. BLM aerially seeded 296 acres with Wyoming big sagebrush. Biologists believe that this fire will encourage antelope use in Indian Canyon.



Population Status and Trend

The pioneering antelope herd that encompasses Units 043-046 has been growing and expanding since first being documented in 1998. Sight records and field observations from 1998 to current indicate core herds exist around the Lovelock Prison/Coal Canyon Road to the Dago Pass turnoff, Limerick Canyon and Coyote Canyon north to Creek Hill in Unit 043. Areas with core groups of antelope that inhabit Unit 044 include Dun Glen Flat, Willow and Spaulding Canyons. Observations from Unit 045 indicate some use around Golconda Canyon north to Pollard Canyon on the west side of the Tobin Range and around Cherry to Flag Canyons on the east side. Use areas in Unit 046 include Smesler Pass and Buffalo and Enda Mountains. The population is estimated at approximately 160 animals, which will allow for limited harvest opportunities for the inaugural hunt scheduled in 2011.

Units 061, 062, 064, 071, 073: North Central Elko County
 Report by: Matthew Jeffress

Survey Data

A ground survey was conducted in the 061-073 unit group in September 2010. A sample of 561 pronghorn was obtained; yielding ratios of 49 bucks:100 does:47 fawns. The sample size was down from last year and was likely a result of high temperatures in September leading to poor survey conditions. The buck ratio was nine above the ten-year average. The fawn ratio was five below the ten-year average (Table 1).

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

Parameter	2010	2009	2000-2009 Average
Bucks:100 does from fall surveys	49	36	40
Fawns:100 does from fall surveys	47	53	52
Sample size from fall surveys	561	930	753

Habitat

Drier than normal spring and summer conditions were followed by a wetter than normal fall. Early snow accumulations forced pronghorn to use winter range on the far southern extent of the unit group. Several large groups of pronghorn were observed using seedings associated with the 2006 Suzie Fire north of Carlin. High utilization of forage kochia was observed on an otherwise heavily dominated cheatgrass winter range.

Ruby Pipeline, a large natural gas pipeline, now bisects Unit 073, the southern portion of Unit 062 and the far northern portion of Unit 064. The footprint will be seeded; however, there are concerns over ATV utilization along the new pipeline.

No new fires burned in this unit group in 2010.

Population Status and Trend

A total of 99 pronghorn was captured and removed from this unit group in January 2011. Pronghorn were captured and transplanted to the Yakima Nation in Washington State in an effort to establish pronghorn on tribal lands. In addition, 3 does were ear-tagged and fitted with radio collars and 15 bucks were ear-tagged and released on site. These marked animals will provide critical information on seasonal movements of pronghorn within the unit group.

Last year the pronghorn population was slightly over the estimated carrying capacity of the winter range. A combination of the January 2011 pronghorn capture and removal of 99 individuals in conjunction with the 2010 harvest worked to reduce the herd to a sustainable level. Harvest objectives will remain focused

on keeping the pronghorn population within the confines of the unit group's winter carrying capacity of approximately 1,100.

Units 065, 142, portion of 144: Southern Elko County, Northern Eureka County
Report by: Scott Roberts

Survey Data

No post-season surveys for pronghorn were conducted in the unit group.

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 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 in this unit group which may limit herd growth potential and create depredation problems in Unit 144 as antelope continue to disperse further into Eureka County. Newmont Mining Corporation will be breaking ground on the Emigrant Project this year. This new mine will be located east of the existing Rain Mine on the northern end of Unit 065. The effect on antelope habitat is expected to be minimal, but it will increase traffic and the level of disturbance within the area.

Population Status and Trend

The population trend for this unit group is increasing slightly. Tag quotas are expected to be similar to last years.

Unit 066: Owyhee Desert; Northwestern Elko County
Report by: Matthew Jeffress

Survey Data

No survey was conducted in this unit in 2010.

Habitat

No large landscape scale changes occurred in 2010. With the mild winter of 2010-11, good over-winter survival is expected within this unit group.

Population Status and Trend

The population estimate for Unit 066 is similar to last year's. The 2010 harvest rates remained high with a success rate of 93% for the resident general season. Quota recommendations for the 2011 season should be similar to 2010.

Units 067, 068: Western Elko and Northern Lander and Eureka Counties
Report by: Matthew Jeffress

Survey Data

A winter ground survey was conducted in January 2011. A sample of 766 pronghorn was obtained; yielding ratios of 41 bucks:100 does:37 fawns (Table 1). The sample size was slightly below average, possibly due to abnormal winter distribution caused by early winter storms and subsequent periods of above normal temperatures.



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

Parameter	2010	2009	2000-2009 Average
Bucks:100 does from winter surveys	41	49	44
Fawns:100 does from winter surveys	37	35	35
Sample size from winter surveys	766	887	775

Habitat

Drier than normal spring and summer conditions were followed by a wetter than normal fall. Pronghorn were forced onto winter range early last fall; however, open conditions in January and February should have lead to good over-winter survival.

Seedings that were implemented during the past 14 years were being used extensively by wintering pronghorn. Pronghorn were especially utilizing the forage kochia associated with these seeded areas. However, the Izzenhood seeding, implemented by the Elko BLM, was used extensively by livestock this year forcing pronghorn to winter in adjacent, less productive areas.

The 1,100 acre seeding that was implemented by NDOW and the TS Ranch in the northern end of Boulder Valley in January of 2009 in order to improve degraded winter range for pronghorn was only partially successful. In an attempt to further improve the success of this seeding, the area was aerially reseeded in early 2010; however, grasshoppers severely damaged the browse component of the seeding during the early summer months of 2010.

Population Status and Trend

The 067-068 population estimate was slightly lower than last year's. 2010 harvest levels were successful at maintaining the population within the carrying capacity of the winter range and NDOW will attempt to do the same with 2011 quota recommendations.

Units 072, 074, 075: Northeastern Elko County

Report by: Kari Huebner

Survey Data

Ground surveys resulted in 393 antelope classified in Mid-August 2010. The resulting sex and age ratios for the sample were 33 bucks:100 does:40 fawns. The buck ratio was up from 23 bucks:100 does observed last year. Fawn production was 8% higher than the past ten-year average of 37 fawns:100 does. This survey is typically conducted between the archery and rifle season in this unit group due to the migration of antelope out of the northern end of Unit 072 into Idaho during and after the rifle season. This survey normally collected from the ground was conducted using a helicopter last year and resulted in a larger sample size.

Habitat

This unit group was affected greatly by wildfire in 2007 and 2008. A large amount of area burned in the northern end of Units 072 and 074 (Murphy, Scott Creek, and East Slide Rock Ridge Fires-nearly 700,000 acres), and a smaller area burned in Unit 075 (The Hepworth Fire-38,000 acres). On summer range the effects of these fires are proving to be beneficial with perennial grasses and forbs dominating the recovering burned areas; however on winter range, one of the effects has been less available brush on which antelope depend for winter survival.



Population Status and Trend

Overall, this pronghorn herd appears to be stable to slightly increasing. Now that it has been several years since large fires occurred in the area, pronghorn are able to take advantage of the increase in perennial grasses and forbs. Timely spring moisture in 2010 contributed to higher fawn production noted during the survey. However this winter did start off fairly severe in November and the lack of available brush communities on winter range may have contributed to a reduction in fawn recruitment. Hopefully with the extensive seeding efforts in Nevada and Idaho in 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 2010 resulted in 163 antelope classified. The resulting sex and age ratios for the sample were 37 bucks:100 does:21 fawns. The buck ratio was lower than last year's ratio of 46 bucks:100 does and the fawn ratio was down 22% from last year's ratio of 27 fawns:100 does.

Habitat

Major fires impacted this herd's habitat in 2007. The West Basin and Eccles fires (81,741 acres) affected a good portion of Unit 076, and the West Fork Fire (162,151 acres) burned the majority of Unit 081. The long-term effects of these fires should prove to be beneficial to pronghorn as perennial grasses and forbs dominate the recovering burned areas, however the negative effect is expected to be fewer available brush communities on winter ranges.

Population Status and Trend

Overall, this pronghorn herd appears to be stable. This herd has been utilizing the northern areas of Unit 076 more than in previous years with some possible immigration of antelope from Idaho. This is more than likely a result of the large amount of area that burned in these units during the summers of 2000 and 2001. The area had been seeded heavily and was coming back well. Extensive seeding efforts on the 2007 burned areas in northern Unit 081 are also showing increases in antelope use. Although large burns generally result in an increase in antelope, as long as the winters are not too severe, this herd is expected to slightly increase in future years. The dry conditions in units 077, 079, and 091 may contribute to less of an increase than noticed in neighboring herds in northern Elko County.

Units 078, 105 - 107, 121: Southeastern Elko and Central White Pine Counties
Report by: Caleb McAdoo

Survey Data

Survey efforts for this unit group were reduced compared to the previous year. Heavy snow accumulations, which occurred in Steptoe Valley and surrounding areas, forced antelope to move from historical wintering locations in the valley to the higher elevation benches consisting of pinyon-juniper and black sagebrush interface. A total of 215 animals was classified in mid-January, yielding sex and age ratios of 22 bucks:100 does:32 fawns.

Habitat

The spring of 2010 provided significant moisture and cool weather, facilitating a strong onset of forbs and grasses. Summer moisture was sporadic, however; its frequency seemed to sustain the growth of succulent summer forbs and grasses providing quality forage throughout the summer months. Despite having good spring moisture in 2010, water availability throughout the year continues to be an issue for both animal water requirements and forage production and was evidenced by the boom and bust cycle of



observed fawn ratios. Antelope have been especially challenged in areas where they face stiff competition from wild horses for the little water that is available. The Department of Wildlife is in the process of identifying and developing water developments in these unit groups which would provide more consistent water sources for pronghorn on a year-round basis and protecting perennial water sources from degradation.

Population Status and Trend

Despite the above average fawn ratio observed in the 078, 105-107, 121 unit group this year, the 2011 population estimate of approximately 1,000 pronghorn reflects a 17% decline over last year's estimate. This decline was a result of a model adjustment based on a historic winter mortality event (1992-1993) which had originally been underestimated. Although increased mortality rates were applied to the model for the winter of 1992-1993, this population continues to show a long-term upward growth trend. The fawn ratios which had been observed in 2008 and 2009 were well below the long-term average of 30 fawns:100 does. This year's observed fawn ratios were the highest since 2007. Should fawn ratios continue to stay at or above the long-term-average, positive population growth should be realized.

Units 101 - 104, 108, portion of 144: South Central Elko and Western White Pine Counties
Report by: Caleb McAdoo

Survey Data

Units 102, 104, 108, and 144 were surveyed from the ground in mid-October of 2010. A total of 511 animals was classified, yielding sex and age ratios of 39 bucks:100 does:36 fawns. Observed buck ratios were down from last year's ratio of 43 bucks:100 does and likely reflective of an intentional harvest strategy to take advantage of high buck ratios and provide hunting opportunity in this unit group.

Habitat

The spring of 2010 provided significant moisture and cool weather, facilitating a strong onset of forbs and grasses. Summer moisture was sporadic, however; its frequency seemed to sustain the growth of succulent summer forbs and grasses providing quality forage throughout the summer months. Despite having good spring moisture in 2010, water availability throughout the year continues to be an issue for both animal water requirements and forage production and was evidenced by the boom and bust cycle of observed fawn ratios. Wild horse competition with antelope continues to be a problem for this unit group, especially in units 104, 108 and 144^B.

Population Status and Trend

The current population estimate for the 101-104, 108 unit group is down significantly from last year, however; this change is reflective of both a model adjustment based on a historic winter mortality event (1992-1993) and several years of below-average fawn ratios. Until 2007, this population showed a positive upward growth trend, however; the subsequent 3 years of extremely low fawn ratios have provided a downward trend in the population. The dry range conditions in 2007 were likely the culprit in the low fawn recruitment observed in 2008, which was one of the lowest observed in the last 25 years. Fawn recruitment of 23 fawns:100 does observed in 2009 showed an increase over the prior two years, but was still well below the long-term average of 34 fawns:100 does. Fawn recruitment for 2010 was 36 fawns:100 does, which stabilized the downward trend in the population from its peak in 2007.

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

Harvest Results

This was the second year for two new hunts initiated in 2009. There were 7 resident tags for a Sept. 25 - Oct. 4 buck-only muzzleloader hunt. The application rate was again 5 applicants per tag with 2 tag



holders being successful. There were 113 applicants for a 19-tag resident horns-shorter-than-ears any-legal-weapon hunt (Sept. 6 - Sept. 20 season) in which 13 hunters were successful.

Survey Data

The 2010 post-season survey was conducted from the ground between Nov. 15 and Dec. 3. Area coverage was the best in several years. The sample of 1,218 pronghorn yielded sex and age ratios of 27 bucks:100 does:24 fawns. Area coverage was not nearly as good in 2009 when the post-season survey sample of 498 pronghorn resulted in sex and age ratios of 37 bucks:100 does:25 fawns. Sample composition averaged 36 bucks:100 does:28 fawns for the previous 10 years (1999-2008). Fawn recruitment was below average for the 4th consecutive year.

Habitat

On the heels of back-to-back years of severe drought, habitat conditions improved in 2009 thanks to improved precipitation, including substantial June and July rains. The winter of 2009-10 was possibly the harshest since 1992-93. Twice the average snowfall fell in east-central Nevada and consistent cold temperatures resulted in prolonged snow-cover. National Weather Service data show that even the March-May period was less than favorable with 47 inches of snow (260% of average) and temperatures that averaged 3°F colder than normal. May was stormy and 6°F colder than normal. The long winter and delayed spring likely offset any gains in body condition made by pronghorn in 2009 and put limits on the strength of the 2010 fawn crop. Forage production was impressive in June, but overall the 2010 summer brought only 35% of normal precipitation to the Ely area. September brought no moisture, but ended with a run of 6 consecutive days with record high temperatures. Pronghorn entered the recent winter in less than optimum condition. The 2010-11 winter again brought more than twice the average snowfall to east-central Nevada including 30 inches during December, which was the wettest and snowiest on record. Fortunately, a period of moderation came in late January which improved winter conditions for pronghorn. Winter mortality should not have been substantial.

Late winter and spring conditions have been more favorable than those of 2010. As of late March, water-year precipitation for Ely stands at 192%. Local Snotel sites have logged 170% or greater over the same period. The upcoming spring and summer may finally give pronghorn a chance to recover in the short-term.

Recent horse gathers in the northern portion of the unit-group should also be positive. Habitat projects in recent years have reduced tree-cover in north Spring and Antelope valleys. These projects may result in increased potential for this unit-group to support pronghorn if the benefits are not offset by other factors. Seven of the past 10 years have seen below-average moisture for this unit-group.

A wind-energy facility with 90+ turbines has been approved for construction in a portion of Spring Valley that is important to pronghorn. The BLM has received an application for an additional larger site just north of the first. It is unknown how pronghorn will respond to the development of wind-energy facilities in these areas.

Population Status and Trend

This pronghorn herd has declined in recent years due to adverse climatic conditions. Pronghorn fawn recruitment has been below-average for the past 4 years, including the 2 lowest on record. Although conditions for pronghorn became more favorable in 2009, improvements came too late to translate into strong 2009 production and a reversal of the population decline. Coming off the harsh 2009-10 winter and delayed spring, fawn production was below-average again in 2010. The large 2010 post-season sample revealed a buck ratio that was below objective. The 2011 population estimate is slightly below the 2010 estimate and will result in quota recommendation reductions due to the lower buck ratio. Pronghorn should be in somewhat better condition than they were a year ago. Production in 2011 may show an increase over that of 2010.



Units 115, 231, 242: Eastern Lincoln and Southern White Pine Counties

Report by: Mike Scott

Survey Data

Aerial surveys were conducted for pronghorn in this hunt unit during October 2010. A total of 445 antelope was classified, consisting of 96 bucks, 281 does, and 68 fawns. This total provides sex and age ratios of 34 bucks:100 does:24 fawns. This was the first time in more than a decade that aerial surveys for pronghorn were completed in these areas. The bulk of pronghorn observed was in Hamlin, Snake, and South Spring valleys.

Habitat

Habitat conditions during the survey were moderate to good due to slightly below-average summer precipitation. Back-to-back years of poor spring conditions are showing in reduced fawn recruitment. The BLM has recently completed large habitat projects designed to improve habitat for sage grouse in Lake, South Spring, and Hamlin valleys. These may eventually benefit pronghorn. The BLM gathered 850 feral horses from Area 23 in January of 2011. This should result in improved wildlife habitat throughout Area 23, although feral horses remain well above AML. Continued expansion of pinyon-juniper into pronghorn habitat is also likely having some effect on pronghorn habitat. Multiple development projects continue to be a threat to pronghorn habitat including a new wind-energy project in the north end of Hamlin Valley. The BLM is trying to get multiple water developments constructed for antelope in various locations in units 115 and 231. These should allow for expanded use of habitat in these areas.

Population Status, and Trend

Low fawn survival in three of the last four years, despite heavy ongoing coyote control, resulted in a downturn in the population for pronghorn in these areas. The computer-generated population estimate for 2011 is lower than that of 2010.

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 November 2010. There were 358 antelope classified; yielding sex and age ratios of 32 bucks:100 does:34 fawns. The majority of the survey was conducted in Antelope, Newark and Little Smokey valleys with limited time spent in Jakes, Railroad and Big Sand Springs valleys. In 2009 the sample was 490 antelope yielding age and sex ratios of 28 bucks:100 does:30 fawns. The 10-year-average (2000-2009) fawn ratio was 26 and has ranged from 5 to 40 during that same time period.

Habitat

Range conditions throughout occupied antelope habitat have improved in recent years due to above-average precipitation. There have been no major wildfires or other land actions to degrade the overall habitat for antelope.

Population Status and Trend

The near record buck harvest, high buck ratio and above-average fawn recruitment all indicate this antelope population is doing well. The 2011 population estimate of approximately 650 antelope is the highest estimate for this herd.



Units 132-134, 245: Eastern Nye and Western Lincoln Counties

Report by: Mike Podborny

Survey Data

Post-season antelope surveys were conducted from the ground in October and November 2010. There were 249 antelope classified, a record sample; yielding sex and age ratios of 32 bucks:100 does:27 fawns. The large sample was partially due to increased survey effort in all major valleys including: Coal, Garden, Railroad, Sand Springs and White River valleys. There were an additional 52 antelope observed but not classified. The previous survey was conducted in September and October 2008 with 190 antelope classified; yielding ratios of 51 bucks:100 does:23 fawns. The average fawn ratio for years when surveys were conducted was 24 and has ranged from 6 to 44.

Habitat

Sagebrush valleys of the northern portion of this area transition into very dry Mohave Desert with desert shrub and cactus in the south. These range types are less productive than typical antelope habitats in northern Nevada. There has been above-average precipitation in 2009 and 2010 improving habitat conditions in the short term. There have been no major land actions negatively affecting the overall habitat for antelope.

Population Status and Trend

There was a record harvest of 37 bucks in 2010 and a record number of antelope classified during surveys. The computer modeled population estimate shows a static population trend in 2011 at approximately 500 animals. This population is still near the all time record high.

Units 141, 143, 151 - 155: Eastern Lander and Eureka Counties

Report by: Jeremy Lutz

Survey Data

Post-season antelope surveys were conducted from the ground in October 2010 and January 2011. Areas surveyed included Crescent Valley, Grass Valley, Antelope Valley, Reese River Valley, and the Simpson Park Mountains. There were 1,094 animals classified during the surveys, yielding sex and age ratios of 61 bucks:100 does:45 fawns.

Habitat

Habitat conditions for antelope continue to improve across much of Lander and Eureka counties. Lander and Eureka counties have experienced above average precipitation for the last 3 years, which has ultimately led to good habitat conditions for antelope. In general the antelope went into the winter in great condition with ample fat reserves to see them through to spring green-up. Additionally, pregnant does were able to take full advantage of the increased quality and production of forage resulting from 3 years of optimal spring precipitation and subsequently produced an above average fawn crop.

Since 1999 over 450,000 acres have burned in management areas 14 and 15. Upper elevation burns have responded exceptionally well with a mixture of brush and native grasses and forbs, however, the lower elevation burns have been less successful with exotic annuals like cheatgrass and mustard dominating the landscape. Areas that were identified as crucial wintering areas for wildlife have had extensive rehabilitation efforts undertaken with the successful establishment of desirable exotics like forage kochia and crested wheatgrass. With successful rehabilitation of fires since 1999 and a maturity of the established plant community, antelope numbers have responded positively to these large scale disturbances in Lander and Eureka counties.



The Battle Mountain BLM is currently working on the last remaining allotment evaluation for the Mount Lewis District. Completion and implementation is anticipated in 2012 and antelope should benefit from these management changes.

Population Status and Trend

The 2010 hunter success rate of 73% was slightly lower than last year (78%). This year's post-season survey sample size was the largest recorded for this management unit group. Heavy snow accumulations in November forced antelope off higher elevations and concentrated them in big groups around lower elevation wintering areas. Large concentrations were found in north Crescent Valley in the Dry Hills. There was some question whether or not these could have been Area 6 antelope that migrated south of Interstate 80. In an attempt to answer this question, two VHF radio collars were hung on adult does in January to determine use areas. As of late March, these antelope appear to be utilizing Area 14.

The 141,143,151-155 unit group antelope population is believed to be below carrying capacity. The large scale fires of 1999 have created ideal habitat for antelope with the increase of annual and perennial grasses and forbs. The total amount and timing of precipitation will ultimately regulate this population's ability to grow and expand.

The average fawn ratio for the past 5 years for this management unit group was 45 fawns:100 does. This was an above-average ratio resulting in strong population growth. The population estimate for this management unit group has increased substantially due to five years of above-average fawn ratios that resulted from above-average precipitation and relatively mild winters.

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

Survey Data

During September and October 2010, a combined total of 239 pronghorn was classified from the ground in Units 161 and 162. The sample consisted of 63 bucks, 130 does, and 46 fawns. The observed fawn ratio of 35 fawns:100 does represents the highest recorded production rate this pronghorn population has shown in over ten years. The observed buck ratio of 48 bucks:100 does indicates there are good numbers of two-year-old and older bucks available for harvest in this portion of northern Nye County. In comparison, the previous composition survey, which occurred in 2009, saw a total of 82 pronghorn classified as 19 bucks, 54 does, and 9 fawns in Units 161 and 162. While the small sample size and difficult survey conditions likely impacted the reliability of observed ratios during the 2009 survey, it is still evident that there was a definite improvement in 2010.

Habitat

Due to drought conditions experienced during more years than not over the past decade, habitat conditions had remained in relatively poor shape in much of central Nevada. However, a return to more favorable climatic conditions during 2009, and much of 2010, provided some recent relief. Despite a return to drier conditions during January and February, data published by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) indicates central Nevada currently remains above average in terms of overall moisture receipts and snowpack conditions. These improvements in weather patterns, in conjunction with recent feral horse gathers, as well as some livestock management changes in central Nevada, should benefit local game populations greatly. Additional feral horse gathers are planned for the near future in central Nevada. Due to lawsuits filed by pro-horse groups in response to most capture plans, these captures may or may not take place.

The completion of 3 water developments in the southern portion of Unit 162 could benefit pronghorn that have been impacted by the decline of natural spring sources caused by feral horses and drought. 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 one water development that was "completed"



and feral horses are currently utilizing it heavily. This results in increasing horse use in the area where the development was supposed to have provided relief to resident pronghorn. The USFS has indicated they are planning on finishing this series of projects in early 2011.

Population Status and Trend

Due to a recent period of improved climatic conditions and the resultant improvements in range conditions, the Unit Group 161-162 pronghorn population showed a dramatic production increase in 2010. This increase should allow for a welcome boost to the herd. In addition to the increase in production, an increase in numbers over the past several years has occurred around agricultural areas in Big Smoky Valley and along the 161/155 unit boundary. This increase can be attributed to the ingress of animals from 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. To account for these recent increases in animals along unit boundaries, as well as the boost in production, an adjustment was made to the Unit Group 161-162 population model resulting in a 21% increase in the population estimate.

Currently the Unit Group 161-162 pronghorn population is taking advantage of improved conditions and showing an increasing trend, but conditions will need to remain favorable for this herd to maintain this growth.

Units 171 - 173: Northwestern Nye and Southern Lander Counties

Report by: Tom Donham

Survey Data

An aerial composition survey was conducted in Unit Group 171-173 during mid-October 2010. A record sample of 208 pronghorn was classified as 56 bucks, 104 does, and 48 fawns. Similar to other central Nevada pronghorn herds, the observed fawn ratio in 2010 was well above recent averages. In addition to the 208 animals classified during the survey, an additional 88 pronghorn were observed on private alfalfa pivots in north Reese River Valley during the survey. These animals could not be classified due to dangers posed by fences, and ditches associated with the pivots.

Habitat

Central Nevada saw an improvement in climatic conditions during 2009 and much of 2010. The resultant improvement to range conditions has benefited game species throughout the area including pronghorn.

Three water developments were 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 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.

Although habitat improvements have occurred recently, a large part of the current increase in the Unit Group 171-173 pronghorn population was due to the continuing trend of large numbers of animals using private agricultural lands along unit and management area boundaries.

Population Status and Trend

Due to recent improvements in overall precipitation receipts and timing, and the resultant improvements in range conditions, the Unit Group 171-173 pronghorn population showed a noticeable increase in production in 2010. As with other central Nevada herds, this increased production was partially responsible for an increase in this year's population estimate. In addition to this latest increase in production, a steady increase in pronghorn numbers has been occurring on agricultural areas in north Reese River Valley, along the Unit 184 boundary.



This increase can be attributed not only to the ingress of animals from transplants of pronghorn in neighboring units, but also because recent drought periods have made the availability of higher quality forage and more reliable access to water in these areas more attractive to pronghorn. In order to account for these recent increases in animals along unit boundaries, as well as the boost in production, an adjustment was made to the Unit Group 171-173 population model resulting in a 93% increase in the population estimate.

Due to regular movements of pronghorn between Nye, Esmeralda, Mineral, and Churchill counties, the total number of pronghorn in the unit group can vary widely on a seasonal basis. This is taken into account when modeling this population and when making population estimates.

Units 181-184: Churchill, Southern Pershing, Western Lander, and Northern Mineral Counties

Report by: Jason Salisbury

Survey Data

A post-season herd composition survey was conducted from the ground in September of 2010. In total, 169 pronghorn were classified; yielding ratios of 56 bucks:100 does:60 fawns. Areas surveyed included Smith Creek Valley, Edwards Creek, Bell Flat, and Dixie Valley. Higher fawn ratios this past year will allow population increases in Management Area 18.

Habitat

Habitat conditions are currently good due to normal receipts of precipitation received in the fall and winter months of 2010 and 2011. Significant new growth of grasses and forbs has been observed in all units of Area 18. Department of Wildlife personnel in cooperation with a livestock permittee are looking at potential water development projects that will benefit both parties. In the Frenchman Flat area plans are being developed to install solar pumps on privately owned wells to benefit both cattle in the winter seasons, as well as year-round antelope use. Solar pump projects have benefitted antelope distribution in the North Dixie Valley area in the past. In Smith Creek Valley, as well as the Shoshone Area, there are plans to install pipe-rail fencing around privately owned springs which will protect water sources from overutilization by feral horses and still allow for pronghorn use.

Population Status and Trend

Overall, this pronghorn herd has been experiencing steady growth since 2003. The observed fawn ratio of 60 fawns:100 does will allow for an increasing population trend. Mild winters over the years has allowed for low overall winter mortality in Churchill County. The buck ratio for Area 18 is healthy as evidenced by an 86% hunter success rate and survey results. The population estimate for Area 18 is approximately 570 animals and represents an increase of 70 animals from what was reported last year.

Units 202, 204: Lyon and Mineral Counties

Report by: Jason Salisbury

Harvest

Seven tags were available for this rifle pronghorn buck hunt in 2010. Of the seven people issued tags, three hunters chose to return their tags prior to the start of the hunt. One out of four hunters harvested a buck for a 25% success rate. This antelope herd summers in California and winters in Nevada. It is possible that the low overall success may be attributed to low numbers on the Nevada side during the October-hunt time frame.



Survey

A winter ground survey was conducted in February 2011. A sample of 55 pronghorn was obtained yielding ratios of 41 bucks:100 does:31 fawns.

Habitat

Winter pronghorn habitat in units 202 and 204 has been severely impacted by continuous drought. The winter range is located in the rain shadow of the Sierra Nevada Mountains. Vegetation is routinely observed to be in poor condition. Spring and summer precipitation is needed to stimulate an increase in forb and perennial grass production.

Population Status and Trend

Fawn production this year was up substantially when compared to the previous three years. The population estimate for the Bodie and Wassuk antelope herd is approximately 150 antelope which was similar to the estimate reported last year. Overall, this herd is experiencing a static population trend.

Units 203, 291: Lyon, Douglas Counties

Report by: Jason Salisbury

Survey Data

The 2010 post-season survey was conducted from the ground in February and resulted in the classification of 39 animals with sex and age ratios of 47 bucks:100 does:43 fawns. The fawn ratio should allow for a slight increase in this population. Areas surveyed include the Buckskin, Singatse, and Pinenut mountain ranges.

Habitat

Past fires such as the Sunrise Fire and the Adrian Fire have produced a positive effect on habitat for pronghorn. Pronghorn are currently utilizing abundant perennial grasses and forbs that are prevalent in the burned areas. Lower elevations of the fires have succumbed to annual grasses and weeds but still provide needed nutrition for the antelope herd.

Population Status and Trend

Fawn production in these unit groups fluctuates depending on the amount of precipitation that is received over the course of the year. Over the long term, fawn ratios obtained through ground surveys have been relatively low. This year's fawn ratio of 43 fawns:100 does should allow for a slight increase in population numbers for 2011.

Units 205, 206: Eastern Mineral County

Report by: Jason Salisbury

Harvest Results

The 2151 hunt for units 205 and 206 occurs in late September. The change in the timing of this season was due to past conflicts that had occurred between hunters and the North and South Off-Road Race.

Survey Data

Ground surveys were conducted for pronghorn during December 2010. A total of 70 antelope was classified consisting of 22 bucks, 35 does, and 13 fawns, which resulted in sex and age ratios of 66 bucks:100 does:35 fawns. Pronghorn were observed in Calvada Flat, Rawhide, Gillis Camp and the Gabbs Valley Range.



Habitat

Springs are prevalent in Unit 205 and 206 but past grazing practices, as well as feral horses, have degraded springs to a non-useful state. Future projects involving the BLM and the livestock permittee should allow for improvement in spring protection, as well as water availability in troughs. In the past five years, water developments such as Calvada, Wildhorse, and Sunrise have been upgraded and rebuilt to provide new dependable water sources for pronghorn.

Population Status and Trend

Overall, this pronghorn population appears to be stable. The 2011 population estimate for the Area 20 antelope herd is approximately 300 animals. The observed fawn ratio suggests maintenance level production is occurring. The Mineral County antelope herd occupies a large geographic area. Small localized populations occur around water sources during the summer months and only during the winter months do antelope congregate in larger groups.

Units 221 - 223, 241: Lincoln and Southern White Pine Counties

Report by: Mike Scott

Survey Data

Aerial surveys were conducted for pronghorn in these units during October 2010. A total of 257 antelope was classified consisting of 49 bucks, 171 does, and 37 fawns, which resulted in a ratio of 29 bucks:100 does:22 fawns. The bulk of the survey was completed in Steptoe and Cave valleys. This marks the first time in a decade that pronghorns were surveyed from the air in Lincoln County. A portion of the survey was completed in Dry Lake Valley from the ground.

Habitat

Habitat conditions appeared to be moderate to good during the survey in spite of below-average summer precipitation. Higher-than-average precipitation was received during August. Dry conditions existed during the spring and early summer of 2010 that likely led to the low observed fawn ratio. Pronghorn were observed using the recently completed habitat enhancement projects in Cave Valley, which were completed for the benefit of sage grouse. Feral horses were gathered in the fall of 2010, which will help reduce stress on pronghorn habitat, although the feral horse numbers remain well above AML. Other threats to pronghorn habitat include a power line project that will run down the west side of the Egan Range and then down through Dry Lake and Delamar valleys, solar and wind energy projects which are proposed for this area, and OHV races that run through pronghorn winter and fawning habitat.

Population Status and Trend

Low fawn survival in three of the last four years, despite heavy, ongoing coyote control projects has resulted in a downward turn in the population. The computer-generated population estimate for 2011 is slightly lower than the 2010 estimate.

Unit 251: Central Nye County

Report by: Tom Donham

Survey Data

Post-season composition surveys were conducted from the ground in Unit 251 during October 2010. A record sample of 243 pronghorn was classified as 86 bucks, 116 does, and 41 fawns. The previous composition survey occurred in 2009 when a total of 209 pronghorn was classified as 61 bucks, 118 does, and 30 fawns. These large sample sizes are the result of considerable numbers of animals moving back and forth across the Nellis Test and Training Range boundary.



Habitat

Pronghorn habitat in Unit 251 has been severely impacted by drought and unreasonable numbers of feral horses for quite some time. The eastern portion of the Unit has also received excessive livestock use for many years. Some natural water sources that have been severely damaged by feral horses for years have gone dry due to regular periods of drought conditions. Due to recent improvements in overall precipitation receipts and timing, and the resultant improvements in range conditions, the Unit 251 pronghorn population showed improved production in 2010. As with other central Nevada herds, a steady increase in pronghorn numbers has been occurring on agricultural areas in the unit. During the summer and fall, half of the pronghorn population in this unit can be found on private land.

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 Salsbury HMA's, as well as the surrounding area. The majority of these feral horses were removed from Unit 251. While these removals provided some much needed relief, the numbers of feral horses in this area are still well above the Bureau of Land Management's (BLM's) current Appropriate Management Level (AML). The BLM is planning on removing additional feral horses in the coming year, and is in the process of conducting a Rangeland Health Assessment in this area. Based upon the outcomes of these two processes, wildlife habitats in Unit 251 could see some improvement soon.

Population Status and Trend

The Unit 251 pronghorn population is currently experiencing an increasing trend. This is due partially to increased production in 2010, but also, and more significantly, due to an increasing number of pronghorn moving out of the Nellis Test and Training Range Restricted Area and onto private alfalfa pivots immediately adjacent to the boundary. Many of these animals return to the NTTR seasonally due to hunter pressure in the late summer/early fall, making many unavailable for harvest. For this reason, the Unit 251 population estimate does not include a large portion of these animals. Numbers of pronghorn in areas further from the NTTR boundary, and not impacted by these unusual levels of immigration/emigration, are considered stable to slightly increasing.



ROCKY MOUNTAIN ELK

Units 061, 071: Bruneau River and Merritt Mountain Area: Northern Elko County

Report by: Matthew Jeffress

Harvest Results

A total of 113 rifle bull elk tags, including incentive and nonresident, were available for the 2010 season. This represented a 2 tag increase from the 2009 quota. Hunter success for the resident rifle bull hunt was 57%. Antlerless rifle tags were increased from 44 tags in 2008 to 147 tags in 2009 and 195 tags in 2010. The 2010 hunter success rate for this hunt was 45%. For more specific hunting results, please refer to 2010 Harvest Tables in the Appendix.

Survey Data

A total of 2,205 elk was classified from a helicopter in January of 2011. The sex and age ratios of the sample were 36 bulls:100 cows:45 calves (Table 1). This year's calf ratio was 2 above the 10-year-average.

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

Parameter	2010	2009	2000-2009 Average
Bulls:100 cows from winter surveys	36	35	33
Calves:100 cows from winter surveys	45	46	43
Sample size from winter surveys	2205	1679	737

Habitat

The Murphy fire burned approximately 550,000 acres during the summer of 2007. This fire burned most of the Bruneau River drainage, parts of the Mahoganies and over half of the Diamond A Desert. The grass and forb components continued to show excellent recovery throughout the burn in 2010. The recovery of the grass and forb segment of the burn, combined with mostly good over-all range conditions, once again facilitated a high calf ratio.

A rangeland consultant, hired by the Forest Service, conducted monitoring in this unit group during the summer of 2009 to determine if elk were having any negative impacts on the vegetation. The results of the monitoring showed there was very little elk use occurring on the native grasses on any of the seasonal ranges. The consultant also stated that increases in the elk population from current levels may contribute to the detriment of the aspen communities that are currently in poor condition.

Population Status and Trend

The 061-071 elk population continued to increase last year. In fact, the average annual rate of increase for this population over the past 10 years has been 17%. The population estimate for 2011 was 2,500 animals. This year's population estimate represents a 500 animal increase over last year's published population estimate. Most of this increase was related to high calf production and adjusted higher cow survival rates in this area combined with the lower than expected cow harvest. It has been reported by a number of sources that approximately 250 to 300 of these elk are residing in the deserts of Idaho on a yearlong basis. In addition, a segment of this herd lives on the Duck Valley Indian Reservation for most of the year. To further complicate the management of this herd is the fact that an unknown number of elk leave Nevada during the hunting season and move into Idaho where hunting pressure is minimal to non-existent. NDOW biologists are working with Idaho BLM and Idaho Fish and Game biologist to improve our understanding of elk distribution along the Nevada/Idaho border in an effort to improve harvest in both



states.

A new split season structure for rifle bull and cow tags has been implemented for the 2011 hunting season. The goal of the split seasons is to distribute hunting pressure while significantly increasing the tag quota and increasing harvest success. Because of low hunter success coupled with high calf recruitment, the Nevada Department of Wildlife expects to drastically increase harvest quotas in an effort to curb elk herd growth and to manage this herd at or near its current level for a series of years to assess utilization on seasonal ranges.

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

Hunt Data

Forty-one rifle bull tags were issued in 2010. Hunter success for resident rifle hunters was 59%, which represents a slight increase over the 2009 hunter success rate. Ninety-nine rifle cow tags were issued with a reported success rate of 39%.

Survey Data

Aerial surveys in January 2011 resulted in the classification of 435 elk. The sex and age ratios of the sample were 50 bulls:100 cows:58 calves. It is important to note 38% of the bulls classified were spikes which verified the phenomenal calf recruitment of 2009.

Habitat

No large fires burned in this unit group during the summer of 2010. However, from 2005-2007 over 677,000 acres burned within occupied elk habitat. Many of these burns have recovered and are now dominated by perennial grasslands. The shrub component will take years to recover. The grass dominated vegetative communities favor elk, which is evident by several years of high calf recruitment.

Population Status and Trend

The 2011 population estimate was 550 elk, a slight increase over last year's estimate. The objective of the recommended antlerless and bull quotas will be to reduce the elk population as identified in the Western Elko County Elk Plan.

A new split season structure for rifle bull and cow tags has been implemented for the 2011 hunting season. The goal of the split seasons is to disperse hunting pressure while increasing the tag quota and harvest success.

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

Harvest Results

Twenty of the 94 bulls harvested from this unit group were taken in Unit 074 during the 2010 season. This elk herd has continued to expand their range both east and south as elk habitat has improved due to recent large-scale fires. As a result, antlerless hunts were initiated for the 073 and 074 units in the 2009 hunting season.

Survey Data

Post-season surveys conducted in February 2011 resulted in the classification of 1,140 elk with observed sex and age ratios of 26 bulls:100 cows:44 calves. The post-season calf ratio indicates that the herd experienced 10% higher recruitment than the past five- year-average production of 40 calves:100



cows. Although the bull ratio was lower than last year's observed ratio (50 bulls:100 cows), it was likely attributed to less survey time in isolated areas where bull groups are typically found.

Habitat

This herd was impacted by severe fire seasons in 2007 and 2008. The Murphy Fire (578,401 acres) burned mostly north and west of the Unit 072 boundary. However, the fire 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. The East Slide Rock Ridge Fire (54,549 acres) burned the northeastern portion of the Jarbidge Wilderness and on out to the north and east towards Idaho. The recovery of perennial grass has been phenomenal in much of the areas that burned. The resulting habitat created by these burns, combined with favorable precipitation patterns, has been excellent for elk and has facilitated high calf production.

The *Jarbidge Mountains Elk Herd Management Plan* identified an objective to maintain the elk herd at 1,000 adult animals plus or minus 10%. According to that plan, the population objective "may be formally adjusted after 2010." Since the sub-plan also stated that "Management decisions should be based on sound scientific data," NDOW worked with the US Forest Service and the Bureau of Land Management to monitor elk use on vegetation at current population levels during the 2010 field season. Results are not yet available.

Population Status and Trend

The *Jarbidge Mountains Elk Herd Management Plan* identifies an elk herd population objective of 1,000 elk plus or minus 10% on the Forest portion of Unit 072. Due to higher calf recruitment observed coupled with the low success of antlerless elk hunters in this area; antlerless tag quota recommendations should be increased significantly to keep up with population growth and meet management objectives.

A monitoring study with 7 radio-collared elk conducted in Unit 073 found that some of the cow elk that had been classified in Unit 073 during winter surveys were elk that resided in Unit 072 during the October antlerless hunting season. As a result, many of the elk classified on the east side of Unit 073 were added to the 072 population estimate.

Unit 073: Stag Mountain Area; Elko County

Report by: Kari Huebner

Harvest Data

Elk hunts were offered for the second year in Unit 073. Thirty-one rifle bull tags were available this past season. That was double the quota offered during the first season. The success rate dropped from 67% to 55% for the rifle bull hunt and the percentage of 6-point or better bulls in the harvest went from 93% in 2009 to 55% in 2010. Eighty antlerless rifle tags were available for the October antlerless season, up from 30 tags last season. In addition, 106 antlerless tags were available for a late season hunt that included Units 072-075. Success was very low due to tough hunting conditions that also made travel difficult including challenges associated with both snow and mud.

Survey Data

Post-season surveys conducted in January of 2011 resulted in the classification of 779 elk with observed sex and age ratios of 33 bulls:100 cows:50 calves. The bull ratio was up from 20 bulls:100 cows last year and the calf ratio was also up from last year's ratio of 41 calves:100 cows.

Habitat

Unit 073 has been severely impacted by fire during the past 10 years. The Charleston fire burned nearly 150,000 acres while the Gopher and Sugarloaf fires burned another 35,129 acres in 2006. The recovery of perennial grass has been phenomenal in much of the burned areas. In addition, these fires were heavily



seeded with a mixture of plant species which accelerated the recovery of these burns, especially the grass component. The resulting habitat created by these burns has been excellent for elk and facilitated high calf production.

Population Status and Trend

A collaring project was initiated in this unit in 2009. Major objectives of this project were to determine seasonal use within Unit 073 and to determine if elk were moving into Unit 073 from surrounding units. During the any legal weapon antlerless season in 2010, none of the 7 collared cows were in Unit 073 (one was in Unit 071 and the remaining six were in the southern end of Unit 072). All seven cows were in Unit 073 by the start of the late antlerless season. Elk that were known to be in Unit 072 for the majority of the year were removed from the 073 population estimate.

During the first hunting season the majority of the elk were available for harvest in Unit 073. However, this past hunting season many of the elk that winter in Unit 073 remained in Unit 072 during the October antlerless season. It appears this may have also been true for the bull hunt where both success and the percentage of 6-points or better in the harvest were both down this past hunting season. Knowledge gained from collaring data will be used to better distribute tags.

Unit 075: Snake Mountains; Elko County

Report by: Kari Huebner

Harvest Results

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. The split seasons and longer season length have allowed elk hunters to be more effective at antlerless elk harvest.

Survey Data

Post-season surveys resulted in the classification of 53 elk yielding age and sex ratios of 364 bulls:100 cows:18 calves. The bull ratio was significantly higher than last year but the calf ratio was lower. This was likely a result of the low sample size. Elk were not found in their typical winter ranges during this survey. This may have been related to increased antlerless hunting pressure during the late antlerless hunt in this unit.

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 was again utilizing this area due to the release of perennial grasses, forbs, and aspen as the burn recovers.

Population Status and Trend

The recommendations for both antlerless and antlered quotas will remain aggressive in order to keep this herd at population objective levels. Due to growing resident elk herds in Unit 074, both units were managed separately and not combined for the antlerless hunt as in past years.

Nearly half of the land in Unit 075 is private. Hunters must be aware that due to the low elk population objective and the significant amount of private land, access to elk during the hunting season can be difficult.



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

Harvest Results

Bull hunter success increased in all 3 weapon classes this year, as opposed to last year, when all 3 decreased. Unit 081 was split out from the rest of the unit group for antlerless tags for both the 2009 and 2010 hunting seasons. This year hunter success increased for antlerless hunters in Unit 081, whereas antlerless hunter success decreased slightly in the remaining units.

Survey Data

Post-season surveys resulted in the classification of 746 elk yielding age and sex ratios of 53 bulls:100 cows:55 calves. The observed bull ratio was above the 5-year average of 36 bulls:100 cows. The calf ratio was 25% higher than the 5-year average of 44 calves:100 cows.

Habitat

Nearly 240,000 acres burned in this unit group during the summer of 2007. Extensive seeding efforts were expended to rehabilitate fire ravaged areas. The habitat seems to be responding favorably as it did after the fires in 1999 and 2000. The long-term outlook is good for elk.

Most water developments proposed for the area have been built and are currently being used by elk. Increased water availability helps distribute elk throughout the unit group. It will be important in the future to replace existing cable fences with pipe-rail fences on water developments in an attempt to more effectively exclude livestock.

In 2007 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 had been reached. Results indicated elk were not competing with livestock for forage at the current population level. The study also discovered ungulate use was fairly high in isolated aspen and mixed-shrub communities. This use was suspected to be a combination of cattle, elk, antelope, and deer. A fecal analysis study was conducted to determine which species may be having the most impact. Results showed mule deer were having the most impact on bitterbrush, whereas cattle, elk, and antelope were concentrating on grasses. There was some use of serviceberry and snowberry by elk and antelope.

Population Status and Trend

The population estimate will show a slight increase this year as a result of high calf production, which is an indication elk are doing well in recovering burned areas.

The majority of this unit group is comprised of checkerboard lands, meaning every other section is either public or private. Elk spend a significant amount of time on private lands in this area. There are currently 10 landowners that participate in the elk incentive tag program who qualified for 33 elk incentive tags in this unit group.

It should be noted that Unit 081 was split out from the rest of the unit group for antlerless tags again this year. This was due to low hunting pressure in the past and increasing elk numbers attracted to the extensive grass component of recovering burns in this unit. The goal was to reduce elk numbers in this area to address complaints of private land owners.



Units 078, portion of 104, 105 - 107: Spruce Mountain; Elko County

Report by: Caleb McAdoo

Harvest Results

For 2010, seven any legal weapon tags were available and six hunters were successful. One muzzleloader tag and two archery tags were also available, with success rates of 100% and 50%, respectively. Overall, 86% of the bulls harvested had 6 or more points, indicating the presence of a strong mature bull segment. For more specific 2010 hunting results, please refer to Harvest Tables in the Appendix Section.

Survey Data

The majority of past surveys in this area were conducted in conjunction with spring and fall deer surveys. This year a dedicated elk only survey was conducted. Elk surveys were completed in January, 2011. Units 078, 104, 105, 107 and portions of 121 were surveyed with the majority of animals observed in units 104 and 105. A total of 278 elk was observed, yielding sex and age ratios of 69 bulls:100 cows:42 calves. The observed calf ratio was exceptional compared to the long-term average of 34 calves:100 cows and was the highest observed calf ratio since 2006. Animal movements observed during both this survey and the Unit 121 elk and deer survey indicated interchange between Units 104,105 and 121.

Weather and Habitat

Forage production and quality in this area are largely dictated by spring and summer precipitation. Spring precipitation conditions in 2010 were ideal for forage production and sporadic rains in July and August sustained conditions. Conditions in the 2009 season were also favorable for forage production and the back-to-back years of ideal conditions were reflected in observed calf ratios this year.

Population Status and Trend

In the winter of 1997, 146 elk were released in Unit 105 on Spruce Mountain. It has been 14 years since the release and elk have established themselves throughout the entire unit group. Although the long-term average calf ratio remains relatively low, positive population growth is occurring and mature bulls have been observed and harvested. Elk have established in Unit 078 and more frequent observations of elk in Unit 106 indicate the herd is still expanding its distribution and range. Movement between adjacent units such as 077 and especially Unit 121 is also occurring and evidenced by elk numbers observed in Unit 105 during late winter surveys in 2011. The total number of elk classified during winter helicopter surveys exceeded the modeled estimate for the unit group. Despite good recruitment observed this year, poor recruitment in recent years would likely not have allowed for population growth. It is expected that some of the elk observed during this year's survey emigrated from adjacent areas, especially Unit 121. Until follow-up radio-collaring work can be accomplished to determine summer and winter use patterns of the elk in question, the current elk population estimate for this unit group will not be drastically altered. Plans for a telemetry study are underway and should help to depict seasonal movements of this elk herd. The increase in observed calf ratios and subsequently, the modeled population estimate, are likely reflective of favorable forage conditions which occurred during the last growing season, in conjunction with a relatively mild winter. Up to this point, harvest management has been designed to promote overall herd growth towards the population objective of 340 elk. With the success of this management strategy, the Department will work to maintain the population objective. Although the population is currently showing strong growth, a continued focus will remain on identifying the causal factors for low observed calf ratios and working towards developing solutions where possible and practicable. Several habitat projects in the area, including chainings, seedings, and water developments, should continue to bolster this population and allow for additional hunting opportunity.



Unit 091: Pilot Range; Eastern Elko County

Report by: Kari Huebner

Harvest Results

Eight bulls were harvested in Unit 091 in the 2010 hunting season, two by Utah hunters and six by Nevada hunters. Due to a reduction in average age of elk being harvested in this unit, coupled with hunter reports, only three tags will be offered in each state this hunting season.

Survey Data

No survey was conducted in Unit 091 this past year.

Population Status and Trend

Unit 091 was formerly designated as unit 079. Hunters that draw this tag will only be able to hunt Pilot Mountain (both in Utah and Nevada) with the new western boundary being the Pilot Valley Road. There is an exception for Unit 091 in the new hunting regulations that will preclude PIW elk hunters from harvesting elk in Unit 091.

Unit 101 - 103: East Humboldt and Ruby Mountains; Elko County

Report by: Caleb McAdoo

Tag Quotas and Harvest Results

Cow tags in this unit group have ranged from 30 in 2005 to 45 in 2006, 60 in 2007, and back down to 40 in 2008, 2009, and 2010. The bull tag quota has ranged from 15 in 2005 to 20 in 2006, and 30 since 2007. Although very few resident elk exist in these units, elk from adjacent units moving in and out of the area require maximum quota flexibility. Despite having 40 cow tags, only 4 cows were harvested during the five-month-long seasons. Six bulls were harvested in the early depredation hunt, of which 83% were 6-points or better. Four bulls were harvested in the late depredation hunt, of which 75% were 6-points or better. For specific 2010 hunting season results, please refer to Harvest Tables in the Appendix Section.

Survey Data

Specific elk surveys were not conducted for 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 reported sightings, and when landowner complaints were received and investigated. Incidental to other wildlife surveys in these units during 2010 and 2011, no elk were observed from the helicopter. Other sightings included movement of bulls and cows between units 107 and 101; units 065 and 102; and 102 and 103. Of the 14 total elk harvested in 2010, nine were harvested in Unit 101, four in Unit 103, and one in Unit 102. Landowner complaints continue to remain low regarding elk damages and remain a measure of success in our management program.

Population Status and Trend

Elk management in this unit group includes 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 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 unit group due to aggressive elk tag quotas.



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

There were 405 total bull tags available in 2010 vs. 419 tags in 2009. The reported 2010 bull harvest was 252, virtually unchanged from the 254 bulls taken in 2009. Total elk harvest was 606 in 2010 compared to 482 in 2009. In a continuing trend, hunter success for 2010 bull hunts was higher than anticipated and harvest was higher than the objective. The overall success rate for bull elk hunters was 62% in 2010, 61% in 2009, and 55% in 2008 following the record low of 48% in 2007. Lower quotas in recent years have resulted in higher success rates in the split-season any-legal-weapon antlered elk hunts. A comparison of quotas and success rates is shown in Table 1. For the second straight year, 2 bulls were harvested by Heritage tag holders in this unit-group.

Table 1. Combined Early/Late Bull Any-Legal-Weapon Hunts Unit-Group 111-115, 221, 222.

	2007	2008	2009	2010
Total Tag Quota	449	371	289	288
Hunter Success	46%	55%	59%	67%

The 2010 harvest was composed of 56% 6-point or better bulls, down slightly from 62% in 2009. The long-term (1981-2009) average has been 51% 6-point or better bulls in the harvest. The percentage of harvested bulls with main beams measuring 44+ inches and 50+ inches was 47% and 28% respectively in 2010. These figures were 53% and 27% respectively in 2009. The percentage of bulls with beams below 43" increased from 47% in 2009 to 53% in 2010. Both point-class and beam length data suggest the average age of harvested bulls may have decreased somewhat in 2010.

Survey Data

Winter herd composition surveys have been combined with spring deer surveys the past 2 years. This strategy resulted in larger overall sample sizes but lower observed bull:100 cow ratios. Large cow-calf groups moved lower by mid February. Bull groups maintain a wider distribution including areas of higher elevation, unless green-up is advanced at lower elevations. During this year's survey spring green-up was mostly lacking, but overall conditions were good due to a heavy mountain snow-pack. A sample of 3,084 elk was classified; yielding sex and age ratios of 22 bulls:100 cows:35 calves. During the 2009 winter survey, 3,100 elk were classified; yielding sex and age ratios of 26 bulls:100 cows:36 calves. Survey samples have averaged 2,103 elk with sex and age composition of 32 bulls:100 cows:40 calves for the previous 10 years (2000-2009).

Habitat

Climatic conditions have been challenging in east-central Nevada. Severe drought dominated 2007 and 2008. Some relief arrived with increased moisture in 2009, however the winter of 2009-10 was the most severe since the deadly winter of 1992-93. Most areas experienced snow-cover for at least 3 months. The spring of 2010 brought favorable moisture but was colder than normal. This was followed by a dry summer with only 35% of normal precipitation recorded over the June - September period. This limited the late-summer nutritional content of forage and therefore the ability of elk to improve body condition. The recent winter was very wet, but periods of moderation prevented deep snow-cover from persisting long enough to have substantial impacts on elk. As of early April, National Weather Service data showed the water-year (October through September) precipitation total for Ely exceeded 200% and already surpassed the annual average. This abundant moisture should improve habitat values for elk with improved forage, nutrition and water distribution.

Elk habitat in White Pine County is under increasing threat from the development of renewable energy facilities and homes. It is unknown how much elk could be impacted from disturbance, roads and other infrastructure associated with wind-energy facilities, some of which are being planned for



mountain-top sites located in important habitat. In addition, private parcels in prime habitat are being subdivided and sold.

Pinyon and juniper encroachment is also limiting habitat in the longer term. In 2008 a 3,000 acre chaining was completed in Unit 112. Additional acreage was chained in Unit 111 during the fall of 2010. The Mule Deer Foundation sponsored the construction of a water development in Unit 112 during the summer 2010. A second unit will be built there in 2011. A project to control rabbit brush in the bottom of Cave Valley was completed in 2010. The area was mowed in late 2009, and rabbit brush re-growth was sprayed in 2010. This area is already receiving increased use by elk. A sizeable project to thin/remove tree-cover on the east Ward Mtn. Bench of Unit 221 was begun in 2010 and will continue on both BLM and Forest System land. Elk should also benefit from numerous other habitat projects that are either ongoing or being planned.

Population Status and Trend

Elk calf recruitment has been below-average for the last 4 years. Habitat and climatic conditions have not permitted elk to recover body condition following winter to be expressed in higher production. This has resulted in lower tag quotas compared to the record level of 2007. The outstanding precipitation received since last fall should bring short-term habitat conditions that will enable elk to improve body condition and productivity in 2011. While calf production may reach average levels in 2011, the full effects of improved conditions may not be seen until 2012. Even though calf recruitment has been below average, it has still been sufficient to fuel population growth. This was due in part to lower harvest levels the past few years. Management will continue to focus on controlling elk numbers in some of the larger units while allowing for growth where other units have yet to reach objectives. Modeling indicates a weakening of bull age structure. Bull quota recommendations for 2011 may decrease in light of this. Increased hunter success rates observed in recent years may also play a part in lower bull quotas. Quota recommendations for antlerless elk may increase. Based on the latest information, the 2011 base population estimate was 5% higher than the 2010 estimate. The Nevada Wildlife Commission approved Department recommendations for additional late antlerless hunts but removed many October antlerless any-legal-weapon hunts that supported the bulk of antlerless elk harvest. It is expected that hunter success rates in the December hunts will be lower than that experienced in October hunts. The elimination of these hunts by the Commission may make it difficult to achieve population objectives.

Unit 121 and portion of Units 104 and 108: Cherry Creek, North Egan, Butte, Maverick Springs, and Medicine Ranges; Northern White Pine County, Southern Elko County
Report by: Scott Roberts

Tag Quotas and Harvest Results

In 2010, 18 resident, 2 nonresident, and 2 incentive tags were available in the any legal weapon hunt. The combined success rate for this weapon class was 73%. There were 5 archery tags available, with hunters enjoying a 60% success rate. There were 3 muzzleloader tags available, with only 1 hunter being successful. Of the 20 bulls that were harvested in this unit group 70 % of them were 6 points or better, and 75% of them came from Unit 121.

Survey Data

Post-season elk surveys were conducted in December 2010 in conjunction with Unit 121 fall deer surveys. A record number of 478 elk was classified for a ratio of 31 bulls:100 cows:49 calves. This year's calf ratio was the highest ever observed in this unit group. Mature bull groups were difficult to locate during the survey. Sixty percent of observed bulls were yearlings. The observed bull ratio was likely biased low due to the tree density within this unit group and the fact that bull elk often remain stationary even with the noise and disturbance caused by a helicopter.



Habitat

Above average precipitation received throughout Eastern Nevada (National Weather and Climate Center website) for the past two years should lead to improved summer range conditions throughout this unit group. The areas throughout the Cherry Creeks and North Egans that are recovering from relatively recent fires and/or vegetation modifications are providing excellent habitat for elk. Pinyon/Juniper (PJ) encroachment continues to plague a significant portion of this unit group. The PJ problem will continue to offer an abundance of potential habitat projects that will benefit elk and other wildlife in the future. Following horse round-ups conducted in the Cherry Creek Range and Butte Valley during the summer of 2006, habitat appeared to be improving. However, horse numbers appear to be increasing rapidly and the range in much of this unit group is in poor condition.

Population Status and Trend

During January of 2011, 3 cow elk were radio collared in Unit 104 and 3 cow elk were collared in Unit 121. The objectives of this project were to determine seasonal use and distribution within the unit group, to quantify elk use on private land, and to begin delineating winter range use between this herd and the Unit 105 herd.

An excellent survey conducted within this unit group resulted in a record number of elk classified this past year. These data indicated the elk herd has been previously underestimated. The population estimate was increased based on the record number of elk observed on survey. An antlerless elk season will be initiated during 2011. The antlerless quota is expected to be relatively liberal in an attempt to slow the growth of this population as it approaches the population objective. Bull tag quota recommendations are expected to be higher than last year.

Units 131,132: White Pine, Grant and Quinn Canyon Ranges; Southern White Pine and Eastern Nye Counties

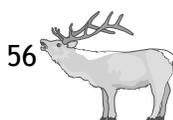
Report by: Mike Podborny

Survey Data

A helicopter post-season herd composition survey was conducted in February 2011. There were additional elk classified during the December 2010 deer survey in Unit 132 and the spring deer survey in March 2011. The total sample of all elk classified was 181; yielding ratios of 65 bulls:100 cows:32 calves. There was deep snow throughout the area surveyed and elk distribution was unique, often many miles from previous winter locations. There were believed to be several larger cow/calf groups not located during any of the surveys. The previous survey in 2010 yielded ratios of 60 bulls:100 cows:43 calves from a sample of 118 elk.

Habitat

A water development project was completed in May 2010 near the Robinson Mine in an attempt to attract elk away from mining activity. This cooperative project between the Robinson Mine, BLM, NDOW, RMEF and local sportsman was funded from the Wildlife Heritage Account. There have been 7 additional water developments built for big game in the White Pine Range and Horse Range in the last 10 years. These projects have been built with volunteer labor from sportsmen working with the Forest Service and with funding from RMEF and NDOW. Elk, deer and other wildlife have been documented using these projects. Fencing projects in the Grant Range and White Pine Range designed to protect spring sources from all ungulate grazers and reduce impacts to range fences from elk will be ongoing in 2011. The Forest Service had contract crews cutting small pinion and juniper trees with chainsaws that are encroaching into the open grass and brush zones of the White Pine Range. This project will continue in 2011, and although not specific for elk, the projects should benefit elk and other wildlife in the future.



Population Status and Trend

There was a record harvest of 30 cows and 21 bulls in 2010. The high harvest and lower calf recruitment documented in 2011 resulted in a slight decrease in the population estimate for 2011 to approximately 300 elk. The 2011 quota recommendations will be designed to keep the population within the objective level identified in the White Pine County Elk Management Plan (300 elk + or - 20%). Five adult cow elk were captured and radio collared in January 2009 along Highway 50. The GPS data from the 3 collars documented regular movements of elk between Units 131 and 108, but no movement outside of a core area. A small portion of Unit 108, south of the Falcon to Gondor power line will be included with Units 131 and 132 for elk hunts beginning with the 2011 seasons.

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

Survey Data

An aerial composition survey was conducted in Unit 162 during late January 2011. A total of 282 elk was classified as 47 bulls, 171 cows, and 64 calves. Unusually warm temperatures and old, patchy snow, resulted in very poor survey conditions which was reflected in the lower than average sample size. These same poor conditions forced the survey crew to spend the vast majority of the survey looking for cow/calf groups and very little time was spent looking for mature bulls. The poor survey conditions, as well as the lack of survey time, were evidenced by the low observed bull ratio. Despite a tough survey, observed calf ratios indicate the Unit Group 161-164 elk population experienced an increase in production rates in 2010 compared to those observed during the previous two years. During the previous composition survey conducted in January 2010, a record total of 488 elk was classified as 319 cows, 95 calves, and 74 bulls.

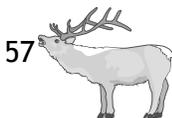
Habitat

Wildlife habitats have benefited from improvements in climatic conditions during 2009, and much of 2010, evidenced by increased production observed in many species of big game occurring in central Nevada including elk. Despite a return to drier conditions during January and February, data published by the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) indicates central Nevada currently remains above average in terms of overall moisture receipts and snowpack conditions.

The USFS has actively been conducting prescribed burns in the Monitor Range, Unit 162 over the past several years. Burns have taken place in the Elkhorn Canyon area on the south end of the Monitors, and in the Seven Mile/Savory area on the north end of the Monitors. Over 6,000 acres have been burned in the Elkhorn Canyon/House Canyon area, although much of this total acreage was due to the loss of control of a prescribed burn. Unfortunately, the USFS did not follow through with rehabilitation efforts following this fire, and recovery of the area may be negatively impacted. These burns were intended to reduce pinion and juniper encroachment and increase sagebrush habitats. These burns were expected to benefit elk, sage grouse, many other species of wildlife, and domestic livestock. Additional pinion and juniper reduction projects in the Austin/Tonopah Ranger District are currently in the planning process. NDOW actively encourages the USFS to implement rehabilitation efforts in their overall plans.

Population Status and Trend

The Unit 162 elk population was the result of a release of 50 elk into the Monitor Range 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 in order to allow the population to expand. Once the herd reached population objectives, tag quotas were increased in order to stabilize herd growth. 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. Following a long and arduous process, the plan was completed and approved by the Commission in January 2004.



The Central Nevada Elk Subplan (CNEP) provides management direction for Management Areas 16, 17, 21, and 25. During the planning process new population objectives were adopted 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. As the population moves towards the new objective, NDOW will likely increase tag quota recommendations to control and keep up with growth of the population.

Currently, the vast majority of the elk population in MA 16 still occurs in the Monitor Range, Unit 162. However, increasing numbers of elk, including cows and calves are being observed in the Toquima Range, Unit 161, and the Hot Creek/Antelope Ranges, Unit 163. The 161-164 herd is experiencing a slight upward trend. This trend is being controlled by an intentional increase in harvest over the past few years. This harvest strategy will continue until the population reaches the CNEP objective, at which time a harvest strategy designed to maintain a static level will be put into place.

Elk movement from Management Area 16 into Management Area 17 to the west has resulted in an established herd there in recent years. Due to the presence of a small number of mature bulls available for harvest in the area, Units 171-173 were included in the 161-164 antlered elk hunts for 2011.

Unit 223: North Pahroc and Bristol Ranges; Lincoln County

Report by: Mike Scott

Survey Data

Aerial surveys were completed in January 2011 and resulted in the classification of 40 elk consisting of 2 bulls, 25 cows, and 13 calves. This provided ratios of 8 bulls:100 cows:52 calves. This marks the first time elk were surveyed and observed in Unit 223. As such, the decision was made to add this unit to the existing 231, 241-242 hunt-unit group.

Habitat

Habitat conditions in Unit 223 should be good due to above average precipitation in 2010. BLM removed some of the feral horses in the unit, which should benefit elk. Potential issues for elk habitat include proposals for new power lines, solar energy, wind energy, and the Silver State Trail.

Population Status and Trend

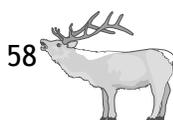
It is unknown at this time if the elk observed on survey are resident elk or were simply wintering in areas they found suitable. When practical, radio or satellite collars may be attached to elk in this area to better determine numbers, distribution, and seasonal ranges and provide the information needed to justify establishing a population model. Other reports and sightings indicate there may be approximately 50 elk in Unit 223.

Unit 231: Wilson Creek Range; Lincoln County

Report by: Mike Scott

Survey Data

Aerial surveys were conducted during January 2011 and resulted in the classification of 269 elk consisting of 61 bulls, 146 cows, and 62 calves. These totals resulted in ratios of 42 bulls:100 cows:42 calves. Of the 61 bulls observed, 39 (64%) were classified as spikes and ragnorns up to 4-points. Heavy snow conditions had pushed elk out of the traditional wintering areas and elk were found using areas where they have not been observed in previous surveys. Elk were very difficult to find on this year's survey and an extra three hour flight was used to find elk in non-traditional areas.



Habitat

One major threat to elk habitat in Area 23 continues to be the Table Mountain Wind Project, which will likely be devastating to the high-elevation summer use areas. Another continuing threat is the expansion of shed-antler hunter's activities using all terrain vehicles (ATV) to search for shed antlers on elk winter range. Although the damage to the range may not be extensive, the constant use of ATV's in late winter and early spring, when elk are at their weakest, may be having a detrimental effect on bull elk. Although BLM gathered approximately 850 feral horses out of Area 23, the numbers of feral horses remain well above the appropriate management level (AML). Immediately after the gather, while NDOW surveyed elk, a total of 315 horses was observed. Although fire suppression does not seem to be a threat to elk habitat, it does not allow large burns which greatly benefit elk, other wildlife, livestock, and feral horses to occur. BLM continues to suppress fires despite direction from fire planning documents that would allow fires to burn up to specified acreages before suppression efforts need to be employed. Large burns that have occurred in Area 23 allowed expansion of elk in both numbers and distribution. Large areas of dense pinyon/juniper forest exist throughout Area 23 that serve as very limited wildlife habitat. RMEF, NDOW, and BLM have been working together to maintain some of the chainings done in the past. It is hoped that by cutting young trees out of previously chained areas, the life of the chainings can be extended. Two water developments for elk were constructed in 2010 in the Prohibition Flat area northeast of Panaca Summit with the help of numerous volunteers. Several more water developments for elk are planned for construction in 2011 by BLM.

Population Status and Trend

A total of 182 elk were harvested in Area 23 during the 2010 season. These included 105 cows and calves and 76 bulls. This represents a 19% decrease in harvest from the 2009 elk season, in which a total of 224 elk were harvested.

The number of elk in Area 23 remains fairly high despite the reasonably high harvest numbers. A total of 560 elk tags was available for all seasons in Area 23. This area was likely the destination for emigrating elk from adjacent areas. Wilderness areas provide elk with places to avoid heavy hunting pressure. The observed bull ratio dropped substantially in 2011, which may be the result of the Utah Spike Hunt reducing the number of young bulls coming into Nevada, or may simply be the result of changes in elk behavior due to weather.

The population objective for Area 23 remains at 350, which is specified in the Lincoln County Elk Management Plan. The quota recommendations will reflect NDOW's goal to keep elk numbers as close to the objective as possible.

Unit 241-242: Delamar and Clover Mountains; Lincoln County

Report by: Mike Scott

Survey Data

Surveys were conducted during January 2010, but only resulted in a total of five elk observed. These were classified as three cows and two calves. In March, a group of 21 cows and 7 calves was observed in Unit 242. Additionally, a group of four bulls was observed in Unit 241. These totals provided ratios of 19 bulls:100 cows:33 calves. Additionally, three cow elk were captured and fitted with radio collars in January of 2011. These marked animals will provide information as to seasonal use areas and total numbers of elk in Area 24.

Habitat

Habitat conditions in Area 24 are favorable for elk, despite broad acreages of dense pinyon/juniper forest. Several fires and habitat projects have opened up large areas that attract elk. Several water developments are scheduled to be built in Area 24 that should reduce conflicts with livestock and private landowners. Feral horses can still be found in high numbers despite BLM's decision to reduce the AML in



this area to zero.

Population Status and Trend

No population model will be developed for elk in this area until NDOW is reasonably sure that elk are established in the area and using seasonal ranges. Return card data indicated that 3 cows and 1 calf were harvested from Area 24 in 2010. Reports and sightings indicated that there may be up to 60 elk in the area during the summer months.

Unit 262: Spring Mountains; Clark and Southern Nye Counties

Report by: Patrick Cummings

Survey Data

In October 2010, a brief 1.8-hour aerial survey conducted in the Spring Mountains yielded a sample of 122 elk. The observed sex and age ratios were 24 bulls:100 cows:23 calves. The survey was terminated prematurely due to rain. As in past years, the aerial survey was focused in the area around the Cold Creek Community. Elk were encountered on the north side of Willow Peak, on the southern margin of the McFarland Burn and in the Willow Creek Drainage.

Habitat

Severely degraded vegetative conditions on the McFarland Burn were noted in 9 aerial surveys conducted between 2002 and 2010, and likely the reason fewer elk were encountered in the area. Degraded habitat is largely the result of an over population of feral horses exacerbated by the 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 these 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 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. 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.

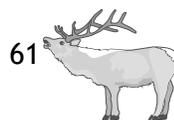
In June 2004, the Humbolt-Toiyabe National Forest issued a Decision Notice and Finding of No Significant Impact for Spring Mountains National Recreation Area Motorized Trails Designation Project. The decision to implement alternative 5 (with modifications) as summarized in the respective Environmental 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 near future.



Population Status and Trend

The population estimate for elk inhabiting the Spring Mountains approximates the estimate reported last year. 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 many years has been low. 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 burro numbers consistent with AMLs and completion of habitat improvements. Elk habitat in the Spring Mountains can be enhanced through seeding areas recently burned, increasing water availability and decommissioning/restoring newly created roads and trails.

As of this writing in April 2011, environmental conditions are adequate due to winter and spring storms that occurred in late 2010 and March 2011. Thus far in 2011, precipitation receipts in January and February were below normal, and the likelihood for an overall dry year is high. In the seasonal drought outlook, the National Weather Service has not identified the likely development of drought conditions during the period April 2011 through June 2011.



DESERT BIGHORN SHEEP

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

Survey Data

In September 2010, a 3 hour aerial survey was conducted in the Stillwater and East Mountain Ranges yielding a sample of 85 bighorn sheep. The observed sex and age ratios were 26 rams:100 ewes:44 lambs. The lamb ratio was slightly above the ten-year average of 41 lambs:100 ewes. The observed ram ratio was significantly lower than the ten-year average of 47 rams:100 ewes. Bighorn sheep were found in the East Range, as well as the Stillwater Range, from Tumble Canyon south to Hare Canyon.

Habitat

Past fires such as the Table Mountain fire have been beneficial to the establishment of perennial grasses and browse species that benefit bighorn sheep. There have been increased observations of bighorn in rehabilitated fire areas.

Geothermal exploration is prevalent in North Dixie Valley where several drill rigs and pads are located along the eastern face of the Stillwater Mountain Range. If geothermal resources are discovered, mitigation measures may need to be put in place to ensure that bighorn are not negatively impacted by green power.

Population Status and Trend

The latest release of bighorn sheep into the Stillwater Mountain Range occurred on November 3, 2009. A total of 25 bighorn sheep was released on the Southwest side of the Stillwater Range near Shirttail Canyon. Within this release complement were 2 ewes fitted with Sirtrack GPS/VHF collars and 3 ewes collared with ATS VHF/ drop-off store-on-board collars to aid in monitoring movement patterns. Information recovered from these collars indicated bighorn were residing on the east side of the Stillwater's between Big Box and East Lee canyons. New information on movements indicated ewes were utilizing the east side of the range for most of the year but moved to the west side of the Stillwater Range to lamb.

Also interesting to note was that a small resident population of bighorn from this most recent release was residing near Mount Well on the west side of the Stillwater's. Both of these areas are well suited for bighorn sheep. Population estimates for 2011 indicate a slight increase in the Stillwater bighorn sheep herd based on last year's lamb recruitment ratio of 44 lambs:100 ewes.

Unit 045: Tobin Range; Pershing County
Report by: Kyle Neill

Survey Data

A composition survey in Unit 045 was conducted for one day from the ground in early September. Areas examined included Cottonwood Canyon south to Miller Canyon. A total of 51 bighorns was observed, which included 15 rams, 25 ewes and 11 lambs for a ratios of 60 rams:100 ewes:44 lambs. As expected, an increased number of older age class rams were observed on surveys. Additionally, the 2010 lamb ratio was approximately 12% below the long-term average and will only moderately improve herd growth.

Population Estimate and Trend

Re-establishment efforts of desert bighorns into the Tobin Range began in 1984 with the release of 34



bighorns into Miller Canyon from the River Mountains. An augmentation of 18 bighorns from the Black Mountains was released into Indian Canyon in 1991. These initial efforts failed to establish a viable population of bighorn in this mountain range. However, re-establishment attempts occurred again in 2003 followed by an augmentation in 2008. Release stock was provided from the Toquima Range. A total of 45 bighorn was released into Golconda Canyon between 2003 and 2008. These releases have led to the establishment of a productive population.

Telemetry data and field observations demonstrate that bighorns continue to utilize habitat from Miller Canyon north to Cherry Creek and often use Mount Tobin during the summer months. Primary use areas are Little Miller and Miller Canyons, Golconda Canyon and Rim Peak to Cottonwood Canyon. The 2011 population estimate is similar to last year.

Units 131 and 164: Duckwater Hills, White Pine Range and North Pancake Range; Southern White Pine and Eastern Nye Counties

Report by: Mike Podborny

Survey Data

A helicopter and ground composition survey was conducted in February 2011. There were 110 bighorns classified, a record sample; yielding sex and age ratios of 38 rams:100 ewes:31 lambs. There were 81 classified in Unit 131 and 29 classified in Unit 164. The previous survey was conducted in August 2009 with 70 bighorns classified; yielding sex and age ratios of 63 rams:100 ewes:56 lambs. During both surveys the sample was obtained from 3 distinct areas including: The White Pine Range near Carrant, the Duckwater Hills and the Pancake Range.

Habitat

Habitat ranges from rocky ridges of low sage and bunchgrasses with few trees in the Pancake Range of Unit 164 and the Duckwater Hills of Unit 131 to steep mountains with thick tree cover of pinion pine, Utah juniper, mountain mahogany, white fir and bristlecone pine and sheer granite cliffs above 11,000 feet in the White Pine Range. Bighorns inhabit all of these habitat types. Snow at higher elevations and springs at lower elevations provide water for bighorns in some areas while water is lacking in other areas now occupied by bighorns. The Forest Service with sportsman assistance is scheduled to build a guzzler outside of the Carrant Wilderness in the White Pine Range in 2011.

Population Status and Trend

There were 2 releases of 49 bighorns into the White Pine Range of Unit 131 since 1999. The 2011 population estimate was approximately 130 bighorns, an increase from the 2010 population estimate of 110. The computer model was adjusted upward to account for the large sample obtained during surveys. Otherwise, low lamb recruitment would have resulted in a static population trend.

Five bighorns in the Duckwater Hills were captured in November 2009 with 3 ewes fitted with GPS/VHF collars. In January 2011 five bighorns were captured in the Pancake Range of Unit 164 with two rams and one ewe fitted with satellite/VHF collars. All bighorns captured had biological samples taken for disease detection. The collared bighorns will be monitored to determine movement and distribution patterns to aid in management. Three rams harvested in Unit 131 since 2008 were believed to be Rocky Mountain Bighorn. DNA testing on one ram proved it was indeed a Rocky. These bighorns were believed to have moved south from the Ruby Mountains. Rams harvested from these units will only be accepted into official record books as Rocky Mountain Bighorns because of the mixing of sub-species that has occurred.



Unit 132: Grant Range; Eastern Nye County

Report by: Mike Podborny

Survey Data

A helicopter composition survey was conducted in February 2011 with 43 bighorns classified; yielding sex and age ratios of 55 rams:100 ewes:41 lambs. The survey was conducted in winter to allow for snow to concentrate bighorns at lower elevations. The bighorns classified were on lower elevation ridges from Irwin Canyon to Little Meadows Creek but the overall sample was about half of what was expected. Two small ram groups were found 6 to 9 miles north of Irwin Canyon on Blue Eagle Mountain. This was the first confirmed sighting of bighorn in this area. The previous survey was conducted in August 2009 by helicopter and resulted in 77 bighorns classified; yielding sex and age ratios of 34 rams:100 ewes:54 lambs.

Habitat

The majority of bighorns live on the west side of the Grant Range from Irwin Canyon to Little Meadows Creek. Some bighorns reside in the lower rocky ridges while others spend the summer and fall months in the high timbered ridges and sheer cliffs near Troy Peak. There have been small fires in the mid to upper elevations of the range that have been beneficial to bighorns by opening up some of the heavy tree cover. There is permanent water in Irwin Canyon, Troy Canyon and Little Meadows Creek and the possibility of developing artificial water around Blue Eagle Mountain is being explored.

Population Status and Trend

High lamb recruitment was offset by the known death of four collared ewes in the last 2 years and resulted in a static population trend. The computer modeled population estimate for 2011 was 90 bighorns. The population expanded in size and distribution since the 2 releases in Troy Canyon in 2005. The population was mostly comprised of younger age class animals but there are a limited number of older age class rams available for harvest. Bighorn sheep were documented using a trail camera by a spring at the southern tip of the Quinn Canyon Range of Unit 132 in the summer 2010. This was the first documented use of bighorn sheep in this area and additional survey effort will be conducted in 2011.

Unit 133, 245: Pahrangat and Mount Irish Ranges; Lincoln County

Report by: Mike Scott

Survey Data

Aerial surveys were completed in August 2010 and resulted in the classification of 96 sheep. These consisted of 23 rams, 54 ewes, and 19 lambs which provides ratios of 43 rams:100 ewes:35 lambs. This was the highest sample of bighorns ever observed in the Pahrangat Range.

Habitat

Habitat conditions should be very good with above-average moisture received in 2010. Water developments should be close to full.

Population Status, and Trend

This population has appeared to be on a very modest upward trend. The computer-generated population estimate for 2011 is slightly higher than the 2010 estimate.

Unit 134: Pancake Range; Nye County

Report by: Tom Donham

Survey Data

No aerial composition survey was conducted in Unit 134 during the 2010 survey period. The next composition survey is scheduled to take place during the fall of 2011. The most recent survey flight was accomplished in September 2009 when a total of 203 desert sheep was classified as 66 rams, 103 ewes, and 34 lambs. Animals were found well distributed throughout the unit.

Habitat

Sheep hunters and recreational users continue to create and travel on illegal ATV and 4-wheel drive trails within Unit 134. This Unit contains Wilderness Study Areas (WSA's) which have stringent regulations regarding off road travel, as well as, traveling on closed or illegally created roads and trails. This practice not only destroys habitat, but also disturbs animals and there is no justification for these activities.

Population Status and Trend

The Unit 134 desert sheep population was reintroduced thru the release of 26 animals nearly 30 years ago. The reintroduction was so successful that this population has been used as a source of transplant stock on 3 different occasions. Trapping and transplanting operations conducted in 1996, 1998, and 2003 resulted in the translocation of 78 animals into other mountain ranges of the state.

Beginning in 2003, and continuing thru 2006, the Unit 134 sheep population experienced below average lamb production rates, due to a combination of high sheep densities and drought conditions, which resulted in a decreasing trend for the herd. Beginning in 2007, production rates have seen an improvement, but remain somewhat below long-term averages. Recent conditions have resulted in a static trend in this population of desert bighorn sheep.

The population model for Unit 134 indicates no change in the population estimate from last year.

Unit 161: Toquima Range; Northern Nye County

Report by: Tom Donham

Survey Data

An aerial composition survey was conducted in Unit 161 during August 2010. The survey included the Arc Dome Wilderness area, as well as a portion of the Northumberland Canyon area north of Mount Jefferson. A total of 144 desert sheep was classified as 27 rams, 82 ewes, and 35 lambs. The below average size of the survey sample was due to a variety of reasons including poor timing of the survey, weather conditions, and the use of a pilot unfamiliar with the area and aircraft being utilized for survey work. Despite the limited sample size, observed lamb ratios indicate the population continues to experience reasonable production, although rates remain below long-term averages. Due to windy conditions, very little 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. No sheep were observed in the Northumberland area during the survey, but very little time was spent surveying that portion of Unit 161.

Population Status and Trend

The Unit 161 desert sheep population was the direct result of a reintroduction effort initiated in 1982, with the release of 22 desert sheep. In 1983, an additional four animals were released. The population level of this desert sheep population has surpassed early predictions by a large margin. The population has fared so well, that it has served as a source of transplant stock on five occasions. A combined total of 123 sheep has been captured and relocated during trapping operations occurring in 2002, 2003, 2006, 2007, and most recently in 2008. 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 vast majority of the Unit 161 herd inhabits the Mount Jefferson area within and around the Alta Toquima Wilderness. A smaller herd has recently established itself north of the main herd in the Northumberland area. Due to lower production rates and recent trapping efforts, the Unit 161 desert sheep population is exhibiting a relatively static trend.

The population model for Unit 161 predicts very little change from last year's population estimate.

Units 162, 163: Monitor and Hot Creek Ranges; Nye County

Report by: Tom Donham

Survey Data

An aerial composition survey was conducted in Unit 163 in late August 2010. The survey yielded a record sample of 136 desert sheep, classified as 29 rams, 75 ewes, and 32 lambs. The observed lamb ratio indicated the herd experienced well above average production in 2010, and the highest recorded production since 1998.

Population Status and Trend

Although a small number of desert bighorn already existed in the Hot Creek Range, sheep releases conducted in 1994 and 1995 stimulated the population and it quickly increased to moderate levels. Beginning in 2001, and continuing thru the next several years, the Unit 163 desert sheep herd suffered reduced production due to impacts from consistent drought periods. Despite poor production, the herd managed to maintain a slightly increasing overall trend during that time period. A recent return to more favorable climatic conditions during 2009 and much of 2010 resulted in improved habitat conditions, and has given the herd a much needed boost. Currently, the Hot Creek desert bighorn herd has shown a moderate increase.

In order to take advantage of an increasing number of sheep inhabiting the southern portion of the Monitor Range, Unit 162 was combined with the Unit 163 desert sheep hunt in 2005. While the population in Unit 162 is not considered robust enough to warrant its own hunt, sheep observations continue to increase, and potential exists for some limited harvest in the hunt unit.

The population model for Unit 163 shows a moderate increase over 2010. A population model for Unit 162 has yet to be developed.

Unit 173: Toiyabe Range; Northern Nye County

Report by: Tom Donham

Survey Data

An aerial composition survey was conducted in Unit 173 on August 25th 2010. The survey was conducted in the Toiyabe Range from North Twin River southward to Peavine Canyon. During the survey, a record total of 121 desert sheep was classified as 10 rams, 79 ewes, and 32 lambs. Due to an earlier than normal survey, rams were not found in association with lamb/ewe groups and this resulted in a below average observed ram ratio. Observed lamb ratios indicated the Toiyabe desert sheep population experienced a noticeable increase in production over that seen in the past three years. During the previous aerial composition survey conducted in 2008 a total of 86 sheep was classified as 17 rams, 54 ewes, and 15 lambs.

Habitat

The largest number and highest densities of desert sheep in the Toiyabe Range occur in Peavine Canyon,

on the southern end of the range. The consistent occurrence of drought conditions over the past decade has encouraged sheep to use riparian habitat found on private lands in the canyon bottom. This behavior has been passed along to several successive generations of sheep at this point, and the problem is likely to continue even if climatic conditions return to more favorable patterns. Depredation of private lands is likely to continue until a solution acceptable to both landowners, NDOW, and sportsmen can be devised. During the past decade, the number of desert sheep depredating private agricultural areas in the Peavine Canyon area has steadily increased. While the number of sheep occupying the area has remained relatively stable,

Population Status and Trend

The Unit 173 desert sheep population is one of several remnant sheep herds that exist in central Nevada. The Toiyabe herd was reduced to an estimated 50 animals by the early 1980's due to human impacts. NDOW released a total of 21 desert sheep from southern Nevada during the years 1983 and 1984, as well as an additional 9 rams in 1993. The releases were intended to augment and stimulate the remaining herd. In 1988, the desert sheep hunting season, which had been closed since 1969, was reopened.

Although the majority of the Unit 173 herd, as well as the highest densities of animals, occurs in the southern portion of the Toiyabe Range in the Peavine Canyon/Seyler Peak area, desert sheep continue to be observed regularly from just north of Wall Canyon south to Dry Canyon. A small number of sheep also occur further north, but expansion of this segment of the population will not be encouraged until such time as domestic sheep grazing is discontinued in the Kingston/Big Creek area.

Due to recent improvements in climatic conditions throughout 2009 and much of 2010 that resulted in increased production, the Toiyabe desert sheep population is expected to show a slight increase in numbers over those estimated in 2009.

Unit 181: Fairview Peak, Slate Mountain, and Sand Springs Range; Churchill County

Report by: Jason Salisbury

Survey Data

In late September 2010, an aerial survey was conducted in Unit 181 which yielded a sample of 157 animals. The sample consisted of 61 rams, 68 ewes, and 28 lambs. The lamb ratio of 42 lambs:100 ewes represents a slight increase from the 38 lambs reported last year.

Habitat

In early fall of 2010, many springs bighorn sheep utilize during the hot summer months were dry. These dry conditions forced bighorn sheep in the Sand Springs Range to utilize spring collection tanks at the South Rail Fence project. One hundred sheep quickly depleted the 2,300 gallon capacity water development. This forced NDOW to run water with a fire truck to replenish the empty tanks. In weeks following the water haul, climatic conditions improved allowing the springs to rebound. To prevent this from happening again, an additional 5,000 gallon storage capability was put in place in March of 2011.

In 2010, the Fairview water development project was built and has a capacity of 7,500 gallons. This new water development will ensure a reliable water source for future needs of the bighorn herd that occupy Fairview and Slate Mountain. Additionally, the old Fairview project was upgraded with a new drinker, pipe-rail fence, and gutter.

Future habitat improvements include building two new water developments in the Sand Spring Range, as well as one in the Monte Cristo Mountains. Additional mountain ranges such as the Cocoons need to be evaluated to determine if they are suitable for desert bighorn.



Population Status and Trend

The Unit 181 herd has experienced dynamic growth since establishment of the herd in 1996. The lamb ratio over the past 10 years has averaged 41 lambs:100 ewes. Only twice in its history has the lamb ratio been in the twenties, one of which followed the 2007 Fairview and Slate Mountain die-off. Currently this population has opportunity for growth in the Fairview and Slate areas. Other sub populations in the Monte Cristo and Sand Springs Range will need to be monitored for density problems and trapping operations initiated as needed. Currently, this population is experiencing an increasing trend. The ram ratio was high and will provide adequate rams well into the future.

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

Survey Data

In September 2010, a two hour aerial survey was conducted in the Clan Alpine Mountain Range yielding a sample of 131 sheep. The observed sex and age ratios were 46 rams:100 ewes:38 lambs.

Habitat

Since 2004, all six water developments within the Clan Alpine Range have been upgraded utilizing new nearly maintenance-free designs that allow for easier use by sheep. In early fall 2010 a water haul was made to the Little Angel Water Development. The water development was ½ full and approximately 1400 gallons was added to its 6,750 capacity.

Population Status and Trend

During the winter of 2009 and 2010 a disease episode may have occurred within this population. NDOW personnel observed a few bighorn sheep coughing but never picked up any mortalities. To determine if a disease event may have occurred, an aerial survey was conducted during the spring 2010. Although the older age ram cohort was not represented as well as it had been in the past, many rams five years of age and younger were observed. It is thought that the older age class rams in this range may have been impacted by a small disease event. During this past season hunters harvested nine rams that averaged six-years of age. The majority of sheep harvested came from Chalk Mountain. Future observations may give insight into what really happened to some of the older age class rams. The 2011 population estimate for this sheep herd shows a slight decline in numbers which reflects losses that were thought to have occurred due to a disease event.

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

Harvest

This was the second year in which an early-late split hunt was instituted. All four hunters in the early season were successful in harvesting rams. The late hunt experienced lower success in which two out of four hunters harvested rams. The average age for the 6 harvested sheep was 5.7 years old which is close to the 10-year average of 5.9 years old.

Survey Data

In September 2010, biologists conducted a two hour aerial composition survey in the Desatoya Range. A total of 42 bighorn sheep was classified generating a ratio of 44 rams:100 ewes:24 lambs. This year's lamb ratio was the lowest ever recorded for the Desatoya sheep population. Areas surveyed included the Desatoya Mountains, Eastgate Hills, Greyback and Broken Hills.



Habitat

Upper elevational snow pack seems adequate in the Desatoya Range and should allow for prolonged moisture and more advantageous range conditions going into the hot summer months.

Population Status and Trend

This year's lamb recruitment rate of 24 lambs:100 ewes was below the level needed to maintain current population levels. The 2011 desert bighorn sheep population estimate for the Unit 184 herd was 180 animals and reflects a 10% decrease relative to the estimate of 200 animals reported last year. This year's lamb ratio of 24 lambs:100 ewes was a 47% decrease from the long-term average. It was believed that the Desatoya Range may have experienced isolated cases of increased winter loss during 2009 and 2010. Survey results indicate the number of mature rams over six years old was not well represented. The population model will reflect a decrease in rams over the age of six years old.

Unit 202: Wassuk Range; Mineral County

Report by: Jason Salisbury

Survey Data

Aerial surveys were conducted in the Wassuk Range during September 2010 and resulted in the classification of 64 sheep. These included 14 rams, 34 ewes, and 16 lambs with ratios of 41 rams:100 ewes:47 lambs.

Habitat

In the summer of 2010, additional water resources were discovered north of the Dry Creek Drainage. These spring sources were being utilized by small groups of sheep. It is promising to see this kind of movement north of Copper Canyon. Adequate habitat exists on Mount Grant to the south but observations of bighorn in this area were not common.

Population Status and Trend

Bighorn Sheep continue to do well in the Wassuk Mountain Range. Continued observations of bighorn are being made north of the Cottonwood Drainage. Since the December 2007 release of 28 sheep into Cottonwood Canyon this population has averaged 64 lambs/100 ewes. This level of lamb recruitment should allow for increases in population size and increased distribution of sheep. Expansion of sheep to the western side of the range is problematic due to a domestic sheep grazing allotment that is occupied during the winter months. The only natural barrier that exists on the west side is the dominance of pinyon-juniper woodlands that may prevent bighorns from occupying it on a yearlong basis.

Unit 204: Pine Grove Range; Lyon County

Report by: Jason Salisbury

Survey Data

A one hour aerial composition survey was conducted on the East Walker of Unit 204 in September of 2010. A sample of 25 animals was obtained including 7 rams, 12 ewes and 6 lambs. The composition ratios consisted of 58 rams:100 ewes:50 lambs.

Habitat

A clay mine in the Rough Creek area will be hauling clay every 10 minutes from the bottom of the canyon on the East Walker River. Numerous sheep utilize the mine area and will be displaced while mine activities are occurring. Methods used to prevent vehicle collisions with bighorn sheep include 15 mph speed limit signs posted where trucks accessing the canyon can see them. The Pine Grove and East Walker



drainages experienced dry range conditions in 2010. Currently bunchgrass as well as browse species for bighorn are in a degraded state.

Population Estimates and Trend

The observed lamb ratio of 50 lambs:100 ewes should allow for a slight increase in this population. Over the long term this small population has remained relatively stable. The small geographic area available to this sheep population limits growth and expansion. This population still provides a unique opportunity for people to observe desert sheep in native habitats close to urban centers. Adequate mature rams are available for harvest.

Unit 205: Gabbs Valley Range, Gillis Range, Pilot Mountains; Eastern Mineral County

Report by: Jason Salisbury

Survey Data

In September of 2010, a 5.5-hour aerial survey in Unit 205 yielded a sample of 202 bighorn sheep. The sample provided a composition ratio of 74 rams:100ewes:56 lambs. The areas surveyed included the Gabbs Valley Range, Pilot Mountain, and the Gillis Range.

Habitat

In March 2010, the Dry Falls water development was rebuilt and will have the capacity to store 6,250 gallons of water. This water resource is heavily used by bighorn sheep. In April of 2010, the Wildhorse water development was rebuilt and will provide a needed resource in the Chukar Ridge area. Previous design flaws in fencing and construction prevented bighorn from using this water resource. In April 2011, the Sante Fe water development will receive more apron material to ensure adequate square feet is available to recharge the 7,200 gallon capacity. Currently there are 70+ sheep utilizing this water source throughout the summer months. Future water development needs for this herd include upgrading Lower Paymaster, Upper Paymaster, Table Mountain, and Homestake water developments, with new tanks, aprons, gutters and pipe-rail fencing.

Riparian areas within Unit 205 are in a degraded state due to long-term overutilization by cattle as well as horses. These utilization levels coupled with drought exacerbate the problems of bighorn accessing needed water when other large ungulates have already drained the troughs.

Population Status and Trend

The lamb recruitment rate of 56 lambs:100 ewes was slightly above the previous ten-year average of 45 lambs:100 ewes. This should allow for a slight increase in the 2011 Gabbs Valley bighorn population estimate.

Unit 206: Excelsior Range; Mineral County

Report by: Jason Salisbury

Harvest

Tag quotas for Unit 206 were increased to three in 2010. Two out of three hunters reported harvesting rams. Average age of the two harvested rams was 9.5 years old.

Survey Data

In late September 2010, an aerial survey was conducted in the Excelsior Mountains. A total of 77 bighorn sheep was observed with a ratio of 64 rams:100 ewes:33 lambs. This sample of 77 sheep was the highest ever recorded for this unit. Areas surveyed include Thunder Mountain, Camp Douglas, Silver Dyke Canyon, Storm Canyon, and Moho Mountain.



Habitat

In the spring of 2011, three water developments will be built to provide needed water to the western half of the Excelsior Range. These three water developments will allow bighorn to utilize a greater portion of the mountain range and over time increase total bighorn numbers in this unit. Some limited water resources exist to the west but bighorns are reluctant to utilize these natural sources because of extensive burro use.

Once these water developments are in place and functioning at full capacity a small complement of bighorn will be released into this area. Future plans to expand the core population of the Excelsior Mountain Range would involve building new water developments on Miller Mountain, the Candelaria Hills, and the Garfield hills.

Population Status and Trend

The population estimate for this herd approximates last year's estimate of 90 animals. Above average lamb recruitment provided a slow but steady increase in numbers in this unit group. Older age class rams were represented well enough in the population to sustain limited harvest. Following the construction of the new water developments, the population should expand into the western side of Unit 206.

Unit 211 North: Monte Cristo Range; Esmeralda County

Report by: Tom Donham

Survey Data

An aerial composition survey was accomplished in Unit 211N during late August 2010. During the survey a record total of 311 desert bighorn sheep was classified as 78 rams, 176 ewes, and 57 lambs. The observed lamb ratio indicates the Monte Cristo herd experienced below average production in 2010. It is unclear at this time whether lowered production rates in 2010 reflect a response to high densities, or to localized climatic conditions. The previous aerial survey was conducted during early October 2008. During the survey, a record sample of 287 sheep was classified as 77 rams, 149 ewes, and 61 lambs.

Habitat

A 4th water development was constructed in the Monte Cristo Range during the spring of 2005. The development was intended to augment natural water sources on the south end of the range that were impacted by drought conditions. Another water development located on the northeast end of the Monte Cristo Range has developed leaks in the storage tanks which have rendered it unusable. This development is scheduled to be rebuilt in the spring of 2011.

Population Status and Trend

The Unit 211N desert sheep population exhibited steady growth over the past seven to ten years. This herd experienced production and recruitment rates noticeably higher than most other central Nevada desert sheep populations during this period. It is unknown whether lowered production rates in 2010 were due to animal densities, or to localized climatic conditions. Currently, despite lowered production, the herd continues to exhibit an increasing trend. If the current rate of increase continues, increasing densities around water sources during the summer months may make removal of ewes and lambs thru trapping and transplanting, or removal of ewes thru a "ewe hunt", necessary to control numbers.

The population model for Unit 211N estimates an increase in population over that reported in 2009.



Unit 211 South: Silver Peak Range and Volcanic Hills; Esmeralda County

Report by: Tom Donham

Survey Data

An aerial composition survey was conducted in the Silver Peak Range portion of Unit 211S during late August 2010. During the survey a total of 156 desert sheep was classified as 48 rams, 68 ewes, and 40 lambs. The observed lamb ratio indicates that this herd continues to experience very good production, and continues to thrive. The previous aerial composition survey was conducted during mid September 2009, and included the Silver Peak Range as well as the Volcanic Hills portions of Unit 211S. During the 2009 survey, a record sample of 294 animals was classified as 56 rams, 177 ewes, and 61 lambs.

Population Status and Trend

The 2009 aerial composition survey sample was much higher than expected, and indicated the Unit 211S desert sheep population was larger than previously estimated. Historically, it was common for movements of sheep to occur between the Monte Cristo Range, Unit 211N, and the Silver Peak Range, Unit 211S. In order to rule out the possibility of sheep movement from Unit 211N into 211S to be the cause of the unusually large sample size in 2009, a survey of both ranges was scheduled in 2010. Based upon sample sizes obtained in each area during back-to-back surveys, a large movement of sheep was ruled out. This indicates that the 211S desert sheep population was indeed at a higher than previously estimated level. The current population model and estimate was adjusted to reflect this increase.

The vast majority of desert sheep inhabit the Silver Peak Range and the Volcanic Hills in Unit 211S. However, some incidental use does occur on the Nevada portion of the White Mountains in the general area of Boundary Peak. Seasonal movements also occur between the Volcanic Hills and Miller Mountain/Candelaria Hills. As this herd continues to expand, increased movements should be expected.

Unit 212: Lone Mountain; Esmeralda County

Report by: Tom Donham

Survey Data

No aerial composition survey was conducted in Unit 212 during the 2010 survey period. The most recent composition survey was conducted during mid September 2009, when a sample of 161 animals was classified as 45 rams, 77 ewes, and 39 lambs. The total sample obtained during the 2009 survey was the highest since 1987. The next aerial survey is scheduled to take place during the fall of 2011.

Population Status and Trend

During the late 1800's and early 1900's, many desert sheep herds in central Nevada were extirpated due to human impacts. Due to the rugged and inaccessible nature of Lone Mountain, a small portion of the desert sheep population inhabiting the area escaped annihilation from unregulated hunting and mining impacts. Interestingly, during the 1920's and 30's, whiskey nearly accomplished what unregulated hunting and mining could not. It is well known that during the prohibition era nearly all the available water sources on Lone Mountain were used for making bootleg liquor. This severely impacted the herds' access to water. Having survived these challenges, the Lone Mountain sheep population increased quickly once regulations were put into place protecting them. By the 1980's it is estimated the herd had increased to over 200 animals.

Following two sheep trapping projects conducted during the late 1980's, the Lone Mountain desert sheep population experienced a sharp decline. By 1991 the herd was estimated to total only approximately 50 animals. The herd remained stable at this low level for a number of years, but by the mid to late 90's the population began showing an increasing trend.

Despite regularly occurring drought periods over the past decade or more, this population continues to



experience an increasing trend. Current data suggest that if the Lone Mountain desert sheep herd continues increasing at the current rate, it will soon be nearing the population level it attained during the 1980's.

Unit 221: South Egan Range; Lincoln County

Report by: Mike Scott

Survey Data

Aerial bighorn surveys were completed in August of 2010 and resulted in the observation of two adult ewes. Cameras placed on water developments during the summer of 2010 indicated there were additional sheep still in the area. In March 2011, a total of six sheep was observed during mule deer surveys. This population appears to have undergone a rapid decrease in total population. NDOW has closed this unit to bighorn hunting until a more thorough investigation can be completed showing a stable bighorn population.

Habitat, Population Status, and Trend

Habitat conditions should be very good with above-average moisture falling in 2010. Two adult ewes were captured and fitted with satellite collars in January 2011, which may help to determine what challenges these sheep are faced with. Existing survey data cannot provide enough information to make a reasonable population estimate.

Unit 223, 241: Hiko, Pahroc, and Delamar Ranges; Lincoln County

Report by: Mike Scott

Survey Data

Aerial surveys were conducted in the Hiko, Pahroc, and Delamar Ranges in August 2010 and resulted in the classification 150 sheep consisting of 31 rams, 90 ewes, and 29 lambs. This provided ratios of 34 rams:100 ewes:32 lambs.

Habitat

Habitat conditions should be very good with above-average precipitation in 2010. The sheep in these areas are faced with numerous habitat issues including OHV races and rock-crawling courses, new power lines, development, and domestic sheep interaction.

Population Status and Trend

The Hiko and Pahroc bighorn population appears to be stable to increasing at this time. Higher lamb ratios are commonly observed in these areas, compared to the Delamars. The Delamar population appears to be somewhat stable despite predator emigration issues. Sheep released in the Delamars are commonly observed in all adjacent mountain ranges. Bighorn sheep in the Delamars continue to be taken by various predators, despite the ongoing predator control project. The computer-generated population estimate for 2011 is slightly below 2010.

Unit 243: Meadow Valley Mountains; Lincoln County

Report by: Mike Scott

Survey Data

Aerial surveys were completed in September 2010 and resulted in the classification of 50 sheep. These consisted of 12 rams, 30 ewes, and 8 lambs which provides a ratio of 40 rams:100 ewes:27 lambs.



Habitat

Habitat conditions should be very good for sheep in this area due to above-average precipitation in 2010. One concern however, was that with precipitation comes higher densities of exotic annual grasses which increased the potential for wildfires. The wilderness designation placed on the Meadow Valleys makes hunting sheep in the area very difficult.

Population Status and Trend

Recent releases of sheep into the Meadow Valleys combined with good habitat conditions should result in an upward trend in the population. The distribution of sheep in the Meadow Valleys is wider than previously suspected. Sheep have been observed using some of the areas burned in 2005, as well as much of the low country adjacent to Meadow Valley Wash. The computer-generated population estimate shows a slight increase over 2010.

Population Status, and Trend

The Mormon Mountain bighorn population appears to be stable at a similar number as in 2010.

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

Survey Data

In September 2010, a 5.3-hour aerial survey yielded a sample of 83 bighorn sheep. The observed sex and age ratios were 83 rams:100 ewes:47 lambs. Bighorn sheep were encountered throughout much of the interior of the Arrow Canyon Range, and within 2.5 miles of available water. The survey sample included 9 ewes, 7 lambs and 6 rams that were encountered in the adjacent Battleship Hills.

Habitat

Bighorn sheep inhabiting the Arrow Canyon Range and Meadow Valley Mountains will likely be impacted by impending infrastructure construction and other influences in conjunction with and emanating from the Coyote Springs master planned community. This 43,000-acre parcel situated northeast of the junction of U.S. 93 and State Route 168 is the largest privately held property for development in Southern Nevada. Construction of the master planned community commenced in 2005; however, construction has stalled in recent years likely due to the economic recession.

The Southwest Intertie Project (SWIP) corridor spans 235 miles from near Ely to north of Las Vegas, and involves construction of a 500-kV transmission line. The new line will provide transmission access to otherwise isolated renewable energy projects in parts of northern and eastern Nevada, and will enhance reliability and efficiency between Nevada Energy's northern and southern service areas. The transmission line will be constructed along the southwest portion of the Arrow Canyon range and cross the range approximately 1.5 miles south of the Arrow Canyon #1 water development.

The southwest end of the Arrow Canyon Range, given close proximity to Las Vegas, continues to attract recreational shooters, casual plinkers and recreational vehicle enthusiasts. It appears bighorn sheep tend to avoid the area as result of increased human presence and frequent firearms discharges.

Population Status and Trend

The bighorn population inhabiting the Arrow Canyon Range endured abnormally dry conditions over a recent four-year-period (2006-09). Despite the absence of summer monsoonal storms, the overall increased precipitation receipts and slightly improved environmental conditions in 2010 should promote population expansion in 2011. The bighorn sheep population estimate is 130 and reflects a modest increase over 120 reported last year.



Unit 252: Stonewall Mountain; Nye County

Report by: Tom Donham

Survey Data

No aerial composition survey was conducted in Unit 252 during 2010. The next scheduled survey is anticipated to occur during the early fall of 2011. The most recent survey took place in late September 2009 which yielded a sample of 192 animals. The sample consisted of 44 rams, 128 ewes, and 20 lambs. The observed lamb ratio represented the lowest level seen since 1997. The previous aerial survey was conducted in 2008 when a record total of 301 sheep was classified as 91 rams, 147 ewes, and 63 lambs. Both the 2008 and 2009 surveys were limited to Stonewall Mountain and a small portion of Pahute Mesa.

Population Status and Trend

The Stonewall Mountain desert sheep population experienced a major decline in 1996. The decline appeared to have been due to a major exodus of sheep out of the area, as opposed to a disease related die-off. The mass movement was believed to have been caused by drought conditions and excessive numbers of feral horses which severely impacted habitat conditions in the Stonewall Mountain area. Removal of feral horses from the area greatly improved range conditions, and the herd has returned to former levels.

Since 1996, the Stonewall sheep population has shown a slow but steady increase. The most recent unusual fluctuation in sheep numbers occurred in 2008. However, the 2008 fluctuation was the exact opposite to that seen in 1996. Due to very severe drought conditions experienced during 2007 and a portion of 2008, a large number of sheep moved into the Stonewall Mountain area from the drier areas deeper within the Nellis Test and Training Range (NTTR). A survey was flown the following year in order to determine if the new arrivals would remain in the area, or would move back into the NTTR with the return of more favorable conditions. Data obtained during the 2009 survey indicated that the majority of the additional animals had indeed left the Stonewall area and move back into the NTTR. Although the movements occurring in 1996 and 2008 were much more drastic than normal, these two incidents were good indications of how easily desert sheep population levels can fluctuate in Unit 252. This makes it very difficult to estimate the population status and trend of this herd on a month to month, or season to season basis. Despite this situation, data indicate the herd is experiencing an overall increasing trend and continues to thrive.

Currently, the population model for Unit 252 includes only that portion of the sheep population that inhabits the Stonewall Mountain area on a consistent basis.

Unit 253: Bare Mountain and Specter Range; Southern Nye County

Report by: Patrick Cummings

Seasons and Hunt Quotas

Separate quotas have been 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.

Survey Data

No survey was conducted on Bare Mountain in 2010. In late October 2009, an aerial survey on Bare Mountain yielded a sample of 174 bighorn sheep. The sample was the largest recorded and reflected sex and age ratios of 61 rams:100 ewes:26 lambs.

In late September 2010, a brief 2.5-hour aerial survey conducted in the Specter Range yielded a sample of 56 bighorn sheep. The sample reflected sex and age ratios of 68 rams:100 ewes:32 lambs. The aerial survey was terminated prematurely; consequently, the survey was conducted only over the eastern and southern portions of the Specter Range.



Habitat

In August 2009, the Bureau of Land Management (BLM) issued a Decision Record approving the Reward Mine project on Bare Mountain. Presently, the CR Reward Corporation (CRRC) is building an open pit gold mine and heap leach processing facility. CRRC holds claims on an area of approximately 2,006 acres. The project is located on the west side of Bare Mountain including and surrounding the site of the old Gold Ace Mine. The northern boundary of the project area is within one-half mile of the Bare #2 water development.

In late April 2010, Fraternity of the Desert Bighorn members and NDOW personnel performed important upgrades to the Bare #3 water development. The improvements included increased storage capacity and installation of a cross-leveling system that incorporates new, low-profile tanks and a new drinker.

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

In 2011, the population estimate for bighorn sheep inhabiting Bare Mountain is 150, and remains unchanged from last year. The current population estimate represents a substantial increase relative to the 110 adult sheep reported in 2009. In 2010, the apparent substantial and rapid herd expansion could not be simulated in the population model. It was reasoned that much of the population expansion was due to ewe and ram ingress from adjacent areas administered by Department of Defense (DOD-Nellis Test and Training Range) and Department of Energy (DOE-Nevada Test Site). The next aerial bighorn survey is scheduled for fall 2011, and should yield information relative to the transience or permanence of the recent population expansion.

Bighorn sheep movements through the Beatty Wash—west Yucca Mountain area serve to maintain connectivity between sheep on Bare Mountain and sheep in adjacent mountains on DOD and DOE lands. The area may be characterized as hills bisected by washes. Due to relatively low topographic relief and lack of water, bighorn sheep use of the area is reasoned to be primarily seasonal (late fall/winter/spring). Although the Beatty Wash area is not high quality bighorn habitat, its value as a movement corridor should be recognized in land use planning.

In 2009, the Bureau of Land Management (BLM) made a land use decision that may jeopardize continued bighorn sheep use of the Beatty Wash—west Yucca Mountain area. The BLM Tonopah Field Station issued a Decision Record that approved what has become the annual off-road, TSCO Vegas to Reno Race. The race attracts over 300 entrants competing in several vehicle classes including: motorcycles, ATVs, UTVs, high clearance SUVs, 4x4 trucks, and dune buggies. The event has been advertised as, “THE LONGEST OFF-ROAD RACE IN THE UNITED STATES.”

The decision to approve the race is an indication that BLM officials failed to adequately consider impacts from establishment of a new road segment through a roadless area recovering from the 2006 Beatty Fire. NDOW remains concerned the decision process failed to adequately analyze direct, indirect and cumulative impacts of the annual race and newly created thoroughfare. One of the anticipated impacts of a race course through the Beatty Burn and Beatty Wash area centers on bighorn sheep avoidance as a result of the route becoming a year-round attractant for casual users of recreational OHVs.

In the Specter Range, events beginning at least as early as Fall 2002 indicate the population had been impacted by disease. Available evidence suggests bacterial pneumonia may have been a factor in high mortality among lambs. Recruitment in 5 consecutive years (2003-07) was negligible. In spring 2008, several observations were made of ewes with attendant lambs. Remote cameras installed at water developments in late spring and summer documented lamb survival through summer 2008. Lamb survival was further noted in the subsequent aerial survey conducted on September 5, 2008. The observed lamb to ewe ratio in the aerial survey was 42 lambs:100 ewes.



Although the Specter Range bighorn sheep population appears to be no longer on a downward trend, successive years of poor lamb recruitment have resulted in comparatively fewer rams in older age cohorts. The population estimate approximates the estimate reported last year (70).

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

Survey Data

No aerial survey was conducted in the Last Chance Range in 2010. In late October 2009, an aerial survey yielded a sample of 162 bighorn sheep. The sample was the largest recorded and reflected sex and age ratios of 54 rams:100 ewes:41 lambs. Bighorn sheep were widely dispersed and were encountered on all major ridges and mountains that comprise the Last Chance Range.

Habitat

Southern Nye County experienced drought conditions in 2009; however, bighorn sheep in the Last Chance Range fared well. Unlike other areas in southern Nye county and Clark County, the Last Chance Range may have intercepted midsummer monsoonal activity based on recorded precipitation amounts (unofficial) at Hidden Hills Airport in Pahrump Valley.

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 the Last Chance Range, the 2011 bighorn sheep population estimate is 170, and approximates the estimate reported last year. The current population estimate reflects a sharp increase relative to 120 reported in 2009. The higher population estimate is consistent with fall 2010 aerial survey sample size and gender and age classifications. In that the apparent scale and abruptness of the expansion could not be simulated in the population model, it was postulated that there was ingress of ewes and older age-class rams from adjacent ranges. Nearby areas from which sheep may have originated include: Nopah Range, Resting Spring Range, Funeral Mountains and Spring Mountains.

In October 2007, 2 Pahrump residents encountered an undetermined number of bighorn carcasses at and near the Last Chance #5 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.

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 September 2010, an aerial survey conducted in the La Madre Ridge and Red Rock Escarpment areas yielded a sample of 56 bighorn sheep. The observed sex and age ratios were 29 rams:100 ewes:18 lambs. The survey sample contrasts with the higher lamb ratio, larger bighorn sample and broader sheep distribution recorded in the 2006 aerial survey. In October 2006, a sample of 104 bighorn sheep yielded sex and age ratios of 55 rams:100 ewes:42 lambs. The survey effort resulted in the largest recorded sample, and documented bighorn presence and distribution along the prominent south ridge that defines Box Canyon.



South of State Route 160, aerial bighorn surveys extended over portions of the south Spring Mountains and Bird Spring Range. Bighorn sheep were encountered on the south end of Potosi Mountain, on and in proximity to Little Devil and Big Devil peaks and on the northern portion of the Bird Spring Range. Inclusive of these areas, 18 rams, 34 ewes and 6 lambs were observed.

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, rock climbing), 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 vegetation across 33,484 acres. The Goodsprings Fire consumed plants within 3 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 a few small mosaics of remaining vegetation included: the 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 Escarpment 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 recent years, several motorists traveling along U.S. 95 adjacent to the Specter Range claimed to have observed bighorn sheep south of the highway on the north end of the Spring Mountains. The reports remain unsubstantiated.

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 an upgrade of the Sandy Valley Road and likely 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 the 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.

In 2011, the population estimate for bighorn sheep inhabiting the Spring Mountains and Bird Spring Range is 160, and reflects a slight herd contraction relative to 170 reported last year. The lowered estimate is consistent with recent aerial survey data and modeled lamb recruitment in 2011.

Unit 263: McCullough Range and Highland Range; Southern Clark County

Report by: Patrick Cummings

Survey Data

In 2010, no aerial bighorn sheep surveys were conducted in Unit 263. In October 2009, aerial bighorn sheep surveys were accomplished in the Highland Range and McCullough Range. In the Highland Range, 14 rams, 24 ewes and 3 lambs were encountered. In the McCullough Range, 127 sheep were classified reflecting sex and age ratios of 53 rams:100 ewes:21 lambs. Bighorn sheep in the McCullough Range were widely distributed and not encountered at lower elevations or in close proximity to water sources.

Habitat

Cogentrix Solar Services, LLC is proposing to develop 2 300-megawatt solar thermal power generating facilities on sites located west of McCullough Pass. Based on project applications submitted to BLM, the surface areas applied for equated to 19,840 acres west of McCullough Pass and 9,760 acres west of Sheep Mountain.

Several projects to construct trails are in planning phase. The City of Henderson intends to construct trails on the north end of the McCullough Range, and BLM will ultimately construct trails in Sloan Canyon National Conservation Area and in 2 wilderness areas.

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 per day over the central portion of the McCullough Range within 1 mile of 2 water developments. The issue and details will be resolved through federal legislation.

Population Status and Trend

The bighorn sheep population inhabiting the Highland Range and McCullough Range is estimated at 250 adults, and approximates the estimate reported last year. The decline from the 2009 estimate (310) was attributed to reduced survivorship in the McCullough Range, ram harvest in 2009 and low recruitment in 2010. Reduced survivorship was simulated in the population model to account for the impacts of elimination of critical water sources during summer 2009. The relative importance of 4 water developments situated in the north McCullough Range has changed. Formerly, the Roy water development was extensively used by sheep during summer months. Since 2006, sheep reliance on the 2 northernmost water developments, Penny and Poppy, has increased while use at Roy has substantially decreased. During summer 2008, Penny and Poppy were depleted. In 2009, it was noted that Penny was fully depleted by 1 August, and Poppy was drawn-down to below 20% of capacity (900 gallons remaining) by 5 August. The expectation that Poppy would be fully depleted in mid August 2009 prompted water haul activities. In a collaborative effort, Nevada Bighorns Unlimited—Reno Chapter and Fraternity of the Desert Bighorn provided essential funding for helicopter services. Within 1 week of assessing the water shortage, a helicopter delivered 1,875 gallons of water to Poppy.

In early November 2008, 14 ewes and 2 male lambs were captured from the south central and north central portions of the McCullough Range to achieve an augmentation of the herd inhabiting the Meadow Valley Mountains. In October 2006, 27 sheep comprised of 22 ewes, 2 female lambs and 3 male lambs were captured from the northeast and central portions of the range to achieve an augmentation of the herd inhabiting the Virgin Mountains. 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 Range. Fifteen sheep comprised of 14 ewes and 1 male lamb were captured from the east-central portion of the range.



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

Seasons and Hunt Quotas

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

Survey Data

In October 2010, an aerial survey in the Newberry Mountains yielded the highest recorded sample of 99 bighorn sheep, and well surpassed the previous record survey sample obtained 2 years earlier. The sample was comprised of 34 rams, 54 ewes and 11 lambs (Table 1).

Habitat

Duke Energy has proposed to build a wind-turbine farm near Searchlight. The BLM expects to have a draft environmental impact statement by July 2011. NDOW is concerned that if constructed, bighorn sheep may be impacted by turbine structures, new roads, appurtenances and human activity during construction and operational phases. New structures, roads and increased human presence may effectively serve as a barrier that suppresses or eliminates connectivity between populations of bighorn sheep in the Newberry Mountains and Eldorado Mountains.

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

Year	Rams	Ewes	Lambs	Total	Rams:100 Ewes:Lambs
2010	34	54	11	99	63:100:20
2008	23	17	11	51	135:100:65
2006	22	19	4	45	116:100:21
2003	11	16	14	41	69:100:88
2000	12	18	5	35	67:100:28
1998	7	13	11	31	54:100:85
1996	6	11	4	21	55:100:36
1994	3	6	0	9	50:100:0

Population Status and Trend

Recent aerial survey data indicate the bighorn population inhabiting the Newberry Mountains was underestimated. The revised population estimate is approximately 90. The larger than expected aerial survey sample in 2010 may have been due, in part, to bighorn ingress from the adjacent Dead Mountains in California and/or the Eldorado Mountains. The next aerial bighorn sheep survey is scheduled for fall 2012.

Unit 265: South Eldorado Mountains; Southeastern Clark County

Report by: Patrick Cummings

Seasons and Hunt Quotas

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



Survey Data

In October 2010, 19 rams, 9 ewes and 1 lamb were observed during a 2.4-hour survey (Table 1). The next aerial bighorn sheep survey in the south Eldorado Mountains is scheduled for fall 2011.

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

Year	Rams	Ewes	Lambs	Total	Rams:100 Ewes:Lambs
2010	19	9	1	29	211:100:11
2003	2	6	4	12	33:100:67
2002	3	2	2	7	150:100:100
1998	14	3	1	18	467:100:33
1996	19	14	5	38	136:100:36
1994	1	5	3	9	20:100:60
1992	3	1	0	4	300:100:0

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 21 aerial surveys conducted since 1969, the number of rams observed either equaled or far exceeded the number of ewes.

Habitat

Duke Energy has proposed to build a wind-turbine farm near Searchlight. The BLM expects to have a draft environmental impact statement by July 2011. NDOW is concerned that if constructed, bighorn sheep may be impacted by turbine structures, new roads, appurtenances and human activity during construction and operational phases. New structures, roads and increased human presence may effectively serve as a barrier that suppresses or eliminates connectivity between populations of bighorn sheep in the Newberry Mountains and Eldorado Mountains.

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 2011 population estimate for the herd inhabiting the entire Eldorado Mountains (Units 265 and 266) is 170, and approximates 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 Unit 266 in 2010. In October 2008, an aerial survey conducted in the northern portion of the Eldorado Mountains yielded a sample of 99 bighorn sheep. The observed sex and age ratios were 56 rams:100 ewes:35 lambs. Bighorn sheep were encountered along the prominent east-west oriented ridge situated northeast of Boulder City, north of US 93 on Hemenway Wall and west of Lakeview Point, Boy Scout Canyon area and south to Burro Wash. The 5.5-hour aerial survey terminated south of Burro Wash.

Habitat

On the northern end of the Eldorado Mountains, the herd has coped not only with persistent drought conditions (2000-02 and 2006-09), but also periodic deaths consequential to collisions with vehicles along U.S. 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 has and will continue to face additional human imposed challenges. Two massive highway projects are intended to divert traffic from Hoover Dam and Boulder City. The Hoover Dam Bypass Bridge and new U.S. 93 alignment was opened to traffic in October 2010. The new bridge spans the Colorado River approximately 1,500 feet downstream of the dam. The second bypass project is planned to extend the new U.S. 93 alignment east and south 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 may 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 objectives were to obtain baseline information on bighorn movements and distributions before and during construction phases. The information would later facilitate identification of impacts that may be mitigated, as well as impacts that may be irreversible.

Population Status and Trend

The 2011 population estimate for the herd inhabiting the entire Eldorado Mountains (Units 265 and 266) is 170, and approximates the estimate reported last year. Some of the sheep from the northern Eldorado Mountains migrate to the south Eldorado Mountains in the fall.

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

Survey Data

In late October 2010, an aerial survey yielded a sample of 185 bighorn sheep. The observed sex and age ratios were 66 rams:100 ewes:17 lambs. Given generally higher bighorn sheep density, the majority of the aerial survey was focused between Echo Bay and Boathouse Cove Road. Since the early 1980s, aerial survey sample sizes, lamb-to-ewe ratios and encounter rates generally trended downward.

Habitat

Drought conditions prevailed in the Black Mountains in 2009. In early 2010, environmental conditions were greatly improved due to the several fall and winter storm systems that occurred over nearly a 4-month period from December 2009 through early March 2010. However, despite overall increased precipitation receipts in 2010, an inactive monsoon season (June-September) resulted in limited production and vigor of forage plant species.

Population Status and Trend

Over the long term, recruitment of young animals appears below levels necessary to maintain the bighorn sheep herd inhabiting the Black Mountains. Aerial survey data (i.e., lamb:ewe ratio, sheep per hour, total observed) portray a steady population decline that began in the latter half of the 1980s.

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 bighorn sheep inhabiting the Black Mountains, and an increase in sheep numbers in the adjacent Muddy Mountains. The bighorn sheep population inhabiting the Black Mountains and Muddy Mountains is expected to experience a small contraction in 2011 due to low lamb recruitment. The 2011 population estimate for bighorn sheep inhabiting the Black Mountains and Muddy Mountains is 800, and approximates the estimate reported last year.

Unit 268: Muddy Mountains; Clark County

Report by: Patrick Cummings

Survey Data

In October 2010, 5.5 hours of flight time were expended to conduct an aerial bighorn sheep survey in the Muddy Mountains. The survey yielded a sample of 271 bighorn sheep. The observed sex and age ratios were 114 rams:100 ewes:24 lambs. Bighorn sheep were widely distributed and encountered throughout much of the survey route. The survey commenced on Rogers Ridge south of State Route 169 and proceeded west to nearly Monocline Valley. The survey did not extend further west to Buffington Pockets, Muddy Peak and Gale Hills, nor did it extend to the North Muddy Mountains.

Habitat

Drought conditions prevailed in the Muddy Mountains in 2009. In early 2010, environmental conditions were greatly improved due to the several fall and winter storm systems that occurred over nearly a 4-month period from December 2009 through early March 2010. However, despite overall increased precipitation receipts in 2010, an inactive monsoon season (June-September) resulted in limited production and vigor of forage plant species.

Dry conditions in 2008 and early 2009 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 and Nevada Bighorns Unlimited—Reno Chapter enabled payment for helicopter services. In May 2009, in the course of about 84 sorties, a Nevada Division of Forestry Bell 204 UH-1 “Huey” helicopter delivered 10,000 gallons of water to 3 water developments. Through these efforts and in advance of summer, 5 Ram was filled to capacity (10,430 gallons), the 4 Boss Tanks at Flipper were filled to capacity (7,200 gallons) and White Basin received 3,500 gallons of water (4,400 gallons available). However, due to lack of rainfall during the monsoon season (June-September) coupled with heavy sheep use, White Basin, 5 Ram, Safari (Muddy Peak) and Jerry (Muddy Peak) were depleted by late summer-early fall 2009.

Population Status and Trend

Desert bighorn sheep occupying the Muddy Mountains and Black 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 bighorn sheep inhabiting the Muddy Mountains, and a decrease in sheep numbers in the adjacent Black Mountains. The bighorn sheep population inhabiting the Muddy Mountains and Black Mountains is expected to experience a small contraction in 2011 due to lowered lamb recruitment. The current bighorn population estimate is 800, and approximates the estimate reported last year.

The population decline from the 2009 estimate (850) was attributed to reduced survivorship in the Muddy Mountains, ram harvest in 2009 and low lamb recruitment in 2010. Reduced survivorship was simulated in the population model to account for the impacts of elimination of critical water sources in late summer-early fall 2009.

In early November 2009, 19 ewes and 1 lamb were captured in the Muddy Mountains and furnished to biologists with the Utah Division of Wildlife Resources. The sheep were released into the Grand Staircase—Escalante National Monument in southern Utah.

In early November 2008, a bighorn sheep capture and removal operation was conducted in the Muddy Mountains to achieve augmentations of herds inhabiting the Delamar Mountains and Meadow Valley Mountains. In the course of 2 days, a total of 41 bighorn sheep was captured and translocated. In the first day, 25 sheep comprised of 20 ewes, 4 female lambs and 1 male lamb were captured and later released in the Delamar Mountains. On the second day, 15 ewes and a single male lamb were captured and subsequently released in the Meadow Valley Mountains.



Unit 271: Mormon Mountains; Lincoln County

Report by: Mike Scott

Survey Data

Aerial surveys were completed in September 2010 and resulted in the classification of 156 sheep consisting of 44 rams, 86 ewes, and 26 lambs. This resulted in ratios of 51 rams:100 ewes:30 lambs. The survey was done in six hours instead of the usual nine, so a large amount of the area was not surveyed.

Habitat

Habitat conditions should be very good in the Mormons due to above-average precipitation in 2010. Areas burned in the Mormons in 2005 continue to have fairly high use by sheep. Water continues to be a limiting factor for sheep in the Mormons despite having five water developments scattered around the range. The Hackberry and West Mormon water developments were both dry during the summer of 2010. No water was available at Hackberry, Wiregrass, Peach, Gourd, or Power's springs. BLM does not appear to be maintaining the existing water developments, so any action taken would likely have to be done by NDOW.

Unit 272: Virgin Mountains and Gold Butte; Northeastern Clark County

Report by: Patrick Cummings

Survey Data

In October 2010, an aerial bighorn sheep survey was attempted over the eastern portion of the Gold Buttes (i.e., Iceberg Canyon, Indian Hills and Azure Ridge). Low clouds and rain hampered survey efforts and necessitated redirection of the survey to central and northern Gold Buttes and the south Virgin Mountains. In the course of the 4.3-hour survey, 8 rams, 7 ewes and 6 lambs were encountered.

In October 2009, an aerial bighorn sheep survey was conducted over the Bunkerville Ridge, Virgin Mountains and northern portions of the Gold Buttes. The survey yielded a sample of 8 rams, 19 ewes and 10 lambs. The majority of the bighorn observations were in the northern portions of the Gold Buttes. The aerial survey did not extend south to include Azure Ridge, Indian Hills, Millions Hills, Iceberg Canyon and Hell's Kitchen.

No aerial surveys were conducted in Unit 272 in 2007 and 2008. 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:100 ewes:37 lambs. Bighorn sheep were encountered in the Whitney Pocket area, Iceberg Canyon, Bitter Ridge and the north end of Lime Ridge.

Habitat

In May 2010, reconditioning of structures and components of the spring development at New Spring was completed. The restoration was a collaborative effort between BLM, Fraternity of the Desert Bighorn and NDOW. Historically, New Spring was an important water source for wildlife and livestock. In 2000, it was noted that water was no longer available in the cement trough.

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

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 (pinion-juniper woodland) vegetation 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 a 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.

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. Bighorn sheep habitat in the Hiller Mountains remains in a degraded state due to an existing burro population and dry conditions.

Population Status and Trend

Bighorn sheep were released in the Virgin Mountains and Gold Buttes to fulfill population augmentation objectives as early as 1979. Since then, approximately 165 sheep from 4 source populations have comprised 9 release contingents. Overall, it has been difficult to assess the effectiveness of individual augmentations over time due to a variety of factors. The region's expansiveness, remote location and complex topography have created challenges to monitoring efforts for nearly 3 decades. However, in recent years, new commitments and additional resources have involved construction of 2 water developments as well as facilitated collection of information useful in assessing bighorn population status.

In view of 3 bighorn sheep augmentations since 2005, monitoring efforts in recent years have expanded beyond biennial aerial surveys and ground-based monitoring of a few marked sheep. Recent enhanced monitoring efforts entail the following: increased numbers of telemetered (VHF) animals, deployment of store-on-board GPS collars (USGS and NDOW), regular fixed-wing aerial telemetry surveys, deployment of trail cameras at water developments, and even occasional reported observations of marked animals from an avid sheep hunter familiar with Virgin Mountains and Gold Buttes.

South of the Virgin Mountains, much of the precipitous bighorn sheep habitat consists of ridges interspersed by areas of moderate terrain. Bighorn sheep released in the Virgin Mountains and Gold Buttes since 2005 have inhabited the south Virgin Mountains, and have dispersed south to Whitney Ridge, Lime Ridge, Tramp Ridge, Bitter Ridge and the Cockscomb (Arizona). Presently, information is lacking on the distribution and abundance of bighorn sheep in Iceberg Canyon, Indian Hills and Azure Ridge. In 2011, the bighorn sheep population is estimated at 120 adults, and reflects a modest increase that accounts for a small population augmentation accomplished in January 2010.

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

Survey Data

In September 2010, a 3.6-hour aerial survey yielded a sample of 101 bighorn sheep. The sample was comprised of 33 rams, 57 ewes and 11 lambs. The number of sheep classified in the sample exceeded the previous high number of bighorn encountered in 2007 (Table 1). Bighorn sheep were observed in proximity to each of 6 water developments in the Spotted Range.



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

Year	Rams	Ewes	Lambs	Total	Rams: 100 Ewes: Lambs
2010	33	57	11	101	58:100:19
2009	24	29	8	61	83:100:28
2008	21	36	15	72	58:100:42
2007	24	47	28	99	51:100:60
2006	15	40	18	73	38:100:45
2005	23	49	9	81	47:100:18
2004	11	21	11	43	52:100:52
2003	7	13	1	21	54:100:8
2002	13	18	6	37	72:100:33
2001	32	26	5	63	123:100:19
2000	18	20	10	48	90:100:50

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 2011, the estimated number of bighorn sheep inhabiting the Spotted Range is 110, and approximates the estimate derived 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 September 2010, a 5.3-hour aerial survey yielded a sample of 100 bighorn sheep. The survey sample was the second largest recorded in the last 22 years, behind the sample obtained last year (n=102). The observed sex and age ratios were 61 rams:100 ewes:43 lambs. Given time of year, the survey was focused over areas within proximity to water sources. The majority of bighorn sheep encountered were within 2 miles of springs and water developments. The Dain Peak water development was noted as dry during aerial surveys in each of the last 4 years.

Population Status and Trend

In 2011, the estimated number of bighorn sheep inhabiting the Pintwater Range is 160, and reflects a slight increase relative to the estimate reported last year. Based on aerial survey data, increased lamb recruitment is anticipated in 2011, and accounts for upward revision of the population estimate.

Unit 282: Desert Range and Desert Hills; Northwestern Clark County

Report by: Patrick Cummings

Survey Data

In September 2010, a brief 3.6-hour aerial survey yielded a sample of 25 bighorn sheep. The small sample was comprised of 10 rams, 11 ewes and 4 lambs. Bighorn distribution was heavily influenced by lack of available water at three water developments: Black Top and White Sage Gap situated on the south end of the range, and Brent Seep located on the north end of the range.

Last year, a 5.0-hour aerial survey yielded a sample of 85 bighorn sheep. The survey sample was the



largest recorded since 1987. The observed sex and age ratios were 92 rams:100 ewes:26 lambs. Given time of year, the survey was focused over areas within proximity to water sources. Nearly all bighorn sheep were encountered within 2 miles of water developments. During the aerial survey in 2008, the Black Top water development was noted as having recent heavy sheep use, but dry.

Population Status and Trend

In 2011, the estimated number of bighorn sheep inhabiting the Desert Range is 110, and approximates the estimate reported last year. Over the long term, the observed proportion of lambs to ewes obtained through aerial surveys has been low. Historically, many bighorn sheep occupying the Desert Range were fall and winter migrants from the adjacent Sheep Range. In March 2011, a new water development was constructed in White Sage Gap. The new unit was situated less than 400 yards west of the older, smaller water development, and was constructed to better ensure water availability on the south end of the range.

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

Seasons, Hunt Quotas and Harvest Results

In 2003, unit designations in Area 28 were simplified. The 4 units comprising the Sheep Range and East Desert Range were consolidated into 2 units. Former Units 283 and 287 were designated Unit 283; former Units 284 and 285 were designated Unit 284.

Survey Data

In September 2010, aerial bighorn sheep surveys were conducted over the northeast, northwest, south and southwest portions of the Sheep Range, Black Hills, East Desert Range, Mule Deer Ridge and Enclosure Ridge. In the course of 15.3 hours of survey, 203 bighorn sheep were classified. The observed sex and age ratios were 47 rams:100 ewes:36 lambs. The survey sample was the largest recorded since 1988. Given time of year, bighorn distribution was expectedly clumped and associated with water sources. Unexpectedly, no bighorn sheep were observed on Enclosure Ridge. The relatively high number of sheep encountered on the East Desert range was likely related to bighorn egress from the adjacent Desert Range in response to depleted water developments, i.e., White Sage Gap and Black Top.

Habitat

In a 3-year period (2004-06), wildland fires ignited 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 2011 population estimate for bighorn sheep inhabiting Units 283 and 284 is 180, 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

In September 2010, unfavorable weather conditions hampered 2 attempts to conduct an aerial bighorn sheep survey over the Las Vegas Range. Collectively, the brief surveys yielded a sample of 35 bighorn sheep. The survey sample was comprised of 14 rams, 13 ewes and 8 lambs. The aerial survey was conducted over Gass Peak, Castle Rock, Fossil Ridge, Peek-a-boo Canyon, Quail Spring, and an area near Frozen Toe water development.

Habitat

In 2005 and 2006, 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

In 2011, the population estimate for bighorn sheep inhabiting the Las Vegas Range is 100, and approximates the estimate reported last year. Fires that occurred during summer months in 2005 and 2006 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 has occurred. The Las Vegas Range supports a resident bighorn population, and during cooler months, a migrant segment from the Sheep Range.



CALIFORNIA BIGHORN SHEEP

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

Harvest Results

Nine resident and two non-resident tags were allocated for hunt Unit 012 during the 2010 hunting season. All eleven of the tag holders reported harvesting rams. Boone and Crockett scores ranged between 143 and 169.5 inches. The harvested rams averaged 8.5 years of age and ranged between 5 and 13 years old. Average age for the harvested rams has consistently remained well above the management objective of 6.0 years of age.

Survey Data

Bighorn composition surveys were conducted in hunt Unit 012 in September 2010. Hunt Unit 012 bighorn population is surveyed on an annual basis because it is one of the largest California bighorn sheep populations in northwestern Nevada and often used as source stock for augmentations or transplants. Sheep and pronghorn are often located in similar habitats within this hunt unit. A total of 100 bighorn was classified and the sample provided composition ratio of 46 rams/100 ewes/36 lambs. Areas surveyed in 2010 included the Calico Mountains, Little High Rock Canyon, High Rock Canyon, Pole Canyon, Yellow Rock Canyon and Mahogany Canyon.

The 2010 lamb ratio of 36 lambs:100 ewes was nearly identical to the ratio observed in 2009 of 35 lambs:100 ewes. Lamb ratios over the past four years have been slightly above maintenance levels and have averaged 37 lambs:100 ewes. The long-term average for this herd between 1994 and 2007 was 56 lambs:100 ewes. An increase in moisture received in 2010-11 will enhance the amount of water available, as well as improve forage conditions for bighorn and other wildlife. The removal of 1900+ horses during a recent horse gather will significantly reduce competition between horses and wildlife for forage, water and space. Spring sources and other riparian areas will benefit from the horse gather due to a reduction in grazing pressure and trampling.

Ram ratios were believed to be much higher in the 012 bighorn population than that obtained from the 2010 survey. The modeled ram ratio for this herd was near 70 rams:100 ewes and thought to be accurate. Hunters generally report locating good numbers of rams during their hunt.

Habitat

The 2010 water year ended on September 30, 2010. The Northern Great Basin that covers much of northwestern Nevada finished the year slightly above average for total water year precipitation and snowfall. The beginning of the 2011 water year started strong with above average amounts of rainfall and snow received during the month of October. Record setting moisture was received throughout much of northwestern Nevada. However, the month of November was relatively mild and little precipitation was received. December was once again very wet with significant snowfall and moisture. As of January 1, 2011 most basins in western Nevada were well above average for both snowfall and total precipitation. The month of January and first two weeks of February were very dry and unseasonably warm and resulted in a significant decrease in the yearly snowfall and precipitation totals. Fortunately, significant moisture was received in late February and March, and the yearly precipitation totals were once again well above average.

The removal of 1900+ horses during the Calico Complex horse gather will help to reduce the competition between horses and wildlife for forage, water and space. Spring sources and other riparian areas will slowly improve in condition due to the reduction in grazing pressure and trampling.

Population Status and Trend

Recruitment within the 012 bighorn population has averaged just 37 lambs: 100 ewes over the past four year period. Lamb recruitment began to drop in 2007 after the area suffered through one of the driest years on record. Dry conditions continued in 2008 and into 2009. Horse numbers rose to 4 or 5 times above Appropriate Management Level (AML). These high horse numbers also negatively affected the bighorn population. Competition for food, water and space forced bighorn away from areas that were dominated by horses. The recent removal of 1900+ horses will significantly reduce the competition and increase the carrying capacity of bighorn within Hunt Unit 012. Increased moisture received in 2010-11 should help to improve forage conditions and water availability for the 012 bighorn herd. The 2011 population model estimate shows a continued static trend with an estimate of 270 animals.

Unit 014: Granite Range; Washoe County

Report by: Chris Hampson

Harvest Results

Two California bighorn sheep tags were offered to resident hunters in hunt Unit 014 during the 2010 hunting season. The two hunters were both successful in harvesting rams. The rams were aged at 8 and 12 years of age and had Boone and Crockett scores of approximately 153 and 155 B&C inches.

The two harvested rams were taken from the Negro Creek subpopulation. Sheep hunters generally concentrate their efforts in the Negro Creek area due to the fact that the area is easily accessed and is less physically demanding than the steep rugged sheep habitat on the southern portion of the Granite Range. Since the Granite Range bighorn hunting season was re-opened in 2005, 100% of the harvest has been taken out of the Negro Creek subpopulation in the northeastern portion of the hunt unit.

Survey Data

Bighorn sheep surveys were normally conducted on an every other year basis. However, despite 2010 being the off year for conducting bighorn surveys, approximately 25 minutes of flight time was expended surveying for bighorn in the Negro Creek area in September 2010. Unfortunately, only seven bighorn were observed while flying high use areas where sheep were normally located. The small sample will not provide for an accurate depiction of recruitment. Therefore, the average lamb recruitment ratio from the past two years (40 lambs:100 ewes) was used in this year's modeling process. Sheep distribution can be altered by many things including current habitat conditions, hunting pressure and activity during the pronghorn hunting season or people out scouting for deer or bighorn. Additional surveys will be conducted later this spring.

In 2009, composition surveys provided ratios of 8 rams:100 ewes:44 lambs. The previous survey had a composition ratio average of 35 lambs:100 ewes.

Habitat

The 2010 water year that ended on September 30, 2010 was slightly above average for total precipitation and snowfall. As of March 15, 2011 the Northern Great Basin shows precipitation and snowfall averages near 150% of normal. Recent storm fronts in late February and March provided much needed moisture and added to the snowpack and precipitation totals. Increased moisture and snowfall is needed to help improve flows to seeps and springs and to provide quality forage for wildlife.

Population Status and Trend

The Bureau of Land Management completed the Calico Complex horse gather and removed 1900+ horses from the region in 2010. Current plans call for another horse gather on the northern and western side of the Granite Range that will help reduce horse numbers in the area to levels that are within the

Appropriate Management Level. These horse removals will reduce competition for water and forage and help all wildlife living in the area.

Improved moisture receipts during the winter of 2010-11 should improve habitat conditions in the Granite Range. The amount of water available to bighorn and flows at lower elevation spring sources should improve dramatically this coming year. Lower elevation habitats in the Granite Range suffered the most during the recent dry cycle experienced between 2007 and mid 2009. The combination of reduced competition with horses and the expected improvement in habitat conditions due to the increased moisture will help to increase the overall carrying capacity for bighorn in the Granite Range.

Bighorn sheep hunters continue to enjoy an excellent hunt in the Granite Range. Hunters have reported observing over 20 different rams during their hunt. This population continues to expand away from core use areas. In recent years, several observations of sheep moving back and forth between hunt Units 012 and 014 have been reported. The population estimate for the Granite Range bighorn herd shows an increasing trend and is now estimated at 120 animals.

Units 021, 022: Virginia Mountains; Washoe County
Report by: Chris Hampson

Harvest Results

The bighorn sheep hunt in Unit 022 can be a challenging hunt and most hunters expend between 8 and 12 days hunting sheep in this unit. Bighorn hunters in this unit reported 100% success since this hunt reopened in 2007. In 2010, both hunters were successful and harvested rams 5 and 7 years of age. Boone and Crockett scores were 150.5 and 159.5 B&C inches.

Hunt Unit 021 which lies just to the west of hunt Unit 022 will also be open to the hunting of bighorn sheep during the 2011 hunting season. This was due to the fact that small numbers of sheep from Unit 022 have pioneered to the west into hunt Unit 021. Mature rams have been observed and these areas may provide hunters additional hunting opportunity.

Survey Data

Composition surveys for bighorn sheep were not conducted in hunt Unit 022 in 2010. In 2009, thirty-seven sheep were classified as 9 rams:100 ewes:59 lambs. Telemetry data from collared bighorn and hunter information provided valuable information on important use areas and the expansion of the sheep population into new areas. Numerous reports of sheep in the Petersen Range of Unit 021 were reported over the past year. Access into hunt Unit 022 can be somewhat difficult due to private land ownership and Indian reservation lands.

Population Status and Trend

Telemetry information collected over the past few years indicates many bighorn sheep released in January 2008 imprinted in the East Cottonwood, Cottonwood and Juniper Basin drainages of the Virginia Mountains. Small numbers of sheep from hunt Unit 022 have also ventured further to the west into hunt unit 021. Sheep have been observed and are known to inhabit the Petersen Mountains on a year-round basis and have been reported in the Fort Sage Mountains, Seven Lakes Mountains and the Dogskin Mountains on a seasonal basis. Additional bighorn have been observed or reported to the east and northeast of the Virginia Mountains on Indian reservation lands in the Terraced Hills and the Lake Range. Many of these areas provide bighorn with high quality habitat. Observations of bighorn in these areas are expected to increase in the future.

The lion removal project in hunt unit 022 is ongoing and Wildlife Services continues to monitor the area for lion activity. Recently, a mature male lion was removed from the north end of the unit. Several other lions have been harvested by sport hunters from both 021 and 022 over the past year.

The Virginia Mountain bighorn population continues to expand in both number and distribution. The population estimate for the herd continues to show an increasing trend and is now estimated at 110 animals. Sufficient mature rams exist in the population to support a limited hunt with a similar quota to last hunting season.

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

Survey Data

California bighorn composition flights were conducted during late September in the Double H, Montana and the Trout Creek Mountains. A total of 123 sheep was observed with ratios of 81 rams:100 ewes:51 lambs. Ram and lamb ratios remain at or above past five-year averages. Sheep were evenly distributed throughout both the Double H's and Montana Mountains. Lamb recruitment remains strong within this unit and bighorn continue to do well.

Habitat

The winter of 2010-11 was relatively mild, however, significant amounts of moisture was received throughout the winter. As of April, conditions were excellent with significant amounts of moisture received during the spring. Much of the vegetation was greening up and should provide plenty of forage for this sheep herd.

Population Status and Trend

The 2011 population estimate was up slightly from the previous year. This population has shown a steady increase in numbers since the first hunt in 1996 and reflects the increase in moisture and the quality forage that has been available for these animals. Strong production and recruitment rates have allowed for this increase.

Exploration activities associated with a future mining operation have not shown any detrimental effects or caused displacement of bighorns at this time. Several animals were collared and monitoring is taking place to see what effects exploration may have on these populations. This monitoring project should allow for the observation of movement taking place between ranges and define lambing areas within this unit. Monitoring will continue throughout most of this year.

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

Survey Data

Aerial composition surveys were conducted in the Pine Forest Range during September 2010. Areas flown included McGee Mountain, the Pueblos, and the Pine Forest Range. A total of 275 sheep was observed with a ratio of 36 rams:100 ewes:52 lambs. This represents the highest number of sheep ever observed during surveys in this unit. Both the lamb ratio and ram ratio were well above the five-year average and the observed ram ratio increased significantly over last year. This sample of 275 sheep represents a 67% increase from the number of sheep observed during 2009 surveys.

Habitat

The winter of 2010-11 was relatively mild with respect to cold temperatures and large storm events. However, a significant amount of moisture was received throughout the winter. As of April, conditions were excellent with significant amounts of moisture experienced during the spring. Much of the vegetation was greening up which should provide plenty of forage for this sheep herd.

Population Status and Trend

Aerial surveys conducted over the past several years in Unit 032 indicate strong lamb recruitment and steady increases in this population. These increases can be attributed to a good forage base in the upper elevations of the Pine Forest Range that is available even during drought years. Densities in the south end of the Pine Forest Range are extremely high. A trapping operation is scheduled to take place in this area in an attempt to reduce densities.

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

Harvest Results

Bighorn sheep hunters on the Sheldon expended an average of 12 days hunting sheep during the 2010 hunting season. The Sheldon can be a difficult hunt due to the extensive amount of sheep habitat available. Inclement weather late in the 2010 hunting season scattered bighorn and made it much more difficult for hunters to locate sheep. Despite the difficult hunting conditions, the average age of the five harvested rams was 7.8 years of age. This was well above the management objective of 6.0 years. Boone and Crockett scores for the 2010 harvested rams ranged between 137 and 154 B&C inches.

Survey Data

Surveys for bighorn were conducted in the Guano Rim area of the Sheldon but were canceled in other bighorn use areas due to an on-going horse capture on the Sheldon. A small sample of 19 bighorn was classified in the Guano Rim area as 14 rams and 5 ewes. A moderate lamb ratio of 45 lambs:100 ewes was used in the modeling process this year. In 2009, the lamb composition ratio was 44 lambs:100 ewes. Harvest data over the past several years indicate a strong representation of mature rams exists in this population.

Habitat

The winter of 2010-11 provided much needed moisture and snow accumulations on the Sheldon. The Snotel site on the Guano Rim shows over 8 inches of precipitation has been received as of March 25, 2011. For comparison purposes, the 2010 total for this same timeframe and site was only 4.3 inches of precipitation. The precipitation totals for the Sheldon were over 150% of average as of April 1, 2011.

The improved water outlook is encouraging, however, most major water sources on the Sheldon were either completely dry or had low levels or flows coming into the winter of 2010-11. Spring runoff should be much improved this year and reservoirs and lakes should hold water into the summer months. However, it may take several years of above average precipitation and snowfall to fully reverse the impacts from the drought and to completely refill larger lakes and reservoirs. Animal distribution patterns that were altered by the dry conditions should return to near normal this upcoming summer. Increased amounts of water available to bighorn and other wildlife will help reduce competition with horses during the summer months.

The Sheldon is once again planning for additional horse removals this coming year. Recent removals have helped reduce overall horse numbers and negative impacts to riparian and upland habitats. The most recent horse gather was centered in the Devaney Mountain/Alkali Peak areas. Bighorn densities were high in this area.

Population Status and Trend

The Sheldon bighorn population has exhibited a slow upward trend. Hunters continue to harvest older age class animals. The population model for bighorn on the Sheldon shows a slight increase and is now estimated at around 220 animals. The carrying capacity for bighorn on the Sheldon will increase due to

improved habitat conditions and reduced competition from horses. The recommended quota for the Sheldon should remain similar to the 2010 quota of 5 tags.

Unit 034: Black Rock Range; Humboldt County

Report by: Ed Partee

Survey Data

Aerial surveys were conducted over a two day period in the Black Rock Range during mid September 2010. A total of 119 animals was classified which was up slightly from last year. These numbers yielded a ratio of 23 rams:100 ewes:49 lambs. Lamb ratios remain above the past five-year average while observed ram numbers declined this year. Sheep were distributed throughout this range and observations indicate they are expanding into new areas every year. The number of sheep utilizing the Big Mountain area remained stable with several mature rams classified during the flight. Despite the number of rams that have been harvested in past years, mature rams are still being observed during surveys.

Habitat

The winter of 2010-11 was relatively mild with respect to cold temperatures and large storm events. However, a significant amount of moisture was received throughout the winter. As of April, conditions were excellent with significant amounts of moisture experienced during the spring. Much of the vegetation was greening up which should provide plenty of forage for this sheep herd.

Population Status and Trend

Population estimates for this bighorn herd indicate a slight increase in numbers for the upcoming year. Higher than average lamb ratios continue to fuel increases in this population. Sheep continue to disperse throughout this range providing plenty of opportunity for harvest in different locations. The highest densities of bighorn can be found in association with Big Mountain, Coleman Creek, and the Rough Canyon area.

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

Unit 035: Jackson Mountains; Humboldt County

Report by: Ed Partee

Survey Data

Aerial surveys were conducted during mid September 2010. A total of 66 sheep was classified which resulted in a ratio of 14 rams:100 ewes:40 lambs. The number of sheep classified during this survey was one of the highest observed. Despite having near record numbers both ram and lamb ratios were well below the five-year average. Very few rams were seen during this survey. Bighorn released as an augmentation to this herd last year are still being monitored and are doing well.

Habitat

Significant amounts of moisture were received compared to the last several years but the 2010-11 winter was still relatively mild. As of April, spring conditions were also excellent with significant amounts of moisture received during the spring. Much of the vegetation was greening up which should provide plenty of forage for new lamb recruitment. This unit has had significant horse utilization in the past which has resulted in direct competition with bighorn sheep in many areas.



Population Status and Trend

The 2011 population estimate remains similar to last year. Observed lamb ratios did not allow for increases in the population. Observations of forage and habitat availability indicate this unit could support more sheep than currently exist in the area. Another augmentation may be needed to bolster this herd and allow for future increases. Harvest this past year showed a slight increase in the quality of animals harvested. Monitoring for both released and existing animals will continue.

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 include 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

Aerial bighorn sheep surveys were conducted during mid September 2010 in the Santa Rosa Range. A total of 70 bighorn was observed which was below last year's survey totals but comparable to the past five-year average. These observations resulted in a ratio of 34 rams:100 ewes:50 lambs. Lamb production was good while ram numbers remained low.

Habitat

Moisture received in this range during the winter of 2010 and spring of 2011 was above average. The ground in this area was well saturated and runoff this year is expected to be high. Vegetation quality and quantity is expected to be above average this year.

Population Status and Trend

Bighorn numbers observed in the north end of the Santa Rosa Range continue to remain well below historic highs. Current follow-up of radio collared bighorn in this range indicate movement of bighorn from Nevada into Oregon. Additional animals have been radio collared on the north end of the range and monitoring work will continue to follow movement patterns between Oregon and Nevada. Cooperative efforts between Nevada and Oregon are also taking place to further movement patterns of this herd.

Units 066, 068: Snowstorm and Sheep Creek; Western Elko and Northern Lander and Eureka Counties
Report by: Matthew Jeffress & Jeremy Lutz

Harvest Results

Seven tags were available in 2010 for combined Units 066 and 068, including one non-resident tag. All 7 hunters were successful in harvesting a ram. Five of the rams were harvested in Unit 066 and 2 were taken in Unit 068. The average age for the 7 rams was 6.6 years and the average B&C score was 159. For more specific harvest results, please review the 2010 harvest tables in the Appendix.

Survey Data

In Unit 068 a total of 78 bighorns was classified from a helicopter in November of 2010 yielding ratios of 67 rams:100 ewes:70 lambs. No survey was conducted in Unit 066.

Habitat

Habitat in the Sheep Creeks continues to increase both in quality and quantity with the above-average precipitation received in Northern Nevada over the last three years. Bighorn sheep continue to expand in the Rock Creek Gorge and Black Mountain areas of the Sheep Creeks.

Population Status and Trend

Mild winters and the availability of better forage between Units 066 and 068 have shown an improvement in good lamb production which has facilitated growth in both herds. The combined population estimate was approximately 230 sheep which represents an increase of approximately 20 animals over last year's estimate. However, a weaker age class structure in the mature ram segment may result in a slightly lower recommended quota.

ROCKY MOUNTAIN BIGHORN SHEEP

Unit 074: The Badlands; Elko County

Report by: Kari Huebner

Harvest Results

Two resident tags were offered in this unit for the 2010 season. Both hunters were successful in harvesting 6-year-old rams.

Survey Data

A composition survey was conducted in March 2011 in conjunction with the spring mule deer survey. A total of 26 bighorns was classified. The resulting sex and age ratios were 144 rams:100 ewes:44 lambs. Survey size was almost half of that classified last year during February. Observations from local residents indicate that a group of ewes and lambs may have been missed during the survey.

Habitat

There was a small burn (Black Mountain Fire) in the southern portion of the unit and a larger one (Scott Creek Fire) in the northern portion of the unit in 2007. These fires are expected to have minimal affect on this bighorn herd.

Population Status and Trend

This herd appears to be stable. Bighorn herds in the nearby East Humboldt, Ruby Mountain, and Pilot Peak ranges experienced significant disease events during the past year. A special survey effort was made to see if the outbreak was occurring in this population at that time. No sick or dying sheep were observed during the flight however lamb ratios were lower than expected. The observed lamb ratio appears to be slightly higher this year. The herd will continue to be monitored for health. The last detectable die-off event for these bighorn was in 1999 and the population has since recovered back to pre-disease levels.

Unit 114: North Snake Range - Mount Moriah; Eastern White Pine County

Report by: Curt Baughman

Harvest Results

In 2010, 2 tags were available for the third consecutive year. Two rams were harvested including a 5-year-old and a 7-year-old. Seven rams have been harvested with an average age of 6.7 years.

Survey Data

In March 2011, a helicopter herd composition survey was flown in combination with a spring deer and elk survey. Conditions for the survey were good, although bighorn distribution was scattered. The total sample was 38 bighorn with sex and age ratios of 38 rams: 100 ewes: 43 lambs. This follows the classification of 51 bighorn during the March 2010 survey with sex and age ratios of 59 rams: 100 ewes: 17 lambs. Bighorn distribution in March 2010 was more restricted due to greater snow-cover.

Weather and Habitat

The winter of 2009-10 was harsh with above-average precipitation and twice normal snowfall. Snow-cover was prolonged due to persistent cold temperatures. The spring of 2010 was cold and wet through May. The growth of vegetation was delayed. Anticipated improvements in habitat conditions were limited by a dry summer. Although only 35% of average moisture was measured at Ely over the June-September



period, the high elevation summer range for this herd should have experienced improved forage, cover and water distribution in 2010. Lower elevation winter ranges would have seen greater impacts from the dry summer. The winter of 2010-11 again brought twice the average snowfall, as well as abundant total moisture. National Weather Service data shows that 185% of average moisture was received at Ely during the current water-year (Oct 2010 through March 2011). Periods of moderation during late January and February opened lower elevation slopes for wintering bighorn. The upcoming spring and summer should provide the best habitat conditions for bighorn in several years. Snow banks will persist at high elevations for most of the summer. This will enhance water and forage availability. Long-term habitat limitations in this unit are related to the dense band of mixed conifer and mountain mahogany that effectively separate seasonal ranges in much of the area presently occupied by bighorn. The use of prescribed fire and managed natural fire are key components to future habitat modifications that could benefit bighorn sheep in this unit.

Population Status and Trend

Lamb production and recruitment declined with the drought of 2007-08. Increased precipitation came too late in 2009 to be reflected in stronger lamb production. Recruitment in 2010 decreased from 2009, possibly influenced by the harsh 2009-10 winter. Lamb survival increased in 2010 and appears to have stabilized the downward population trend of recent years. In addition, a total of 20 mountain lions have been removed from the Snake Range by sportsmen and Wildlife Services in the last 2 years. This is a high number given the presence of the National Park in Unit 115 where hunting is not permitted. Of the 20 lions, 5 were removed from Unit 114 by Wildlife Services over the past 2 winters. Some were taken within, or trailed directly out of bighorn winter range. No collared bighorn ewes have been lost since late 2009. Several ewes were lost during 2008-09 with lion predation accounting for half or more. The combination of lion removal and improving habitat conditions should be favorable for bighorn survival and production in 2011. Population modeling indicates a stable population trend. The number of mature rams in the population is sufficient to sustain continued harvest.

Unit 115: South Snake Range - Mount Wheeler: Eastern White Pine County
Report by: Curt Baughman

Background

The last recorded observation of historic Rocky Mountain bighorn sheep in the south Snake Range was made by Elwin A. Robison in 1971. Bighorn sheep were reestablished in the south Snake Range in 1979 and 1980 with the release of 20 sheep transported from Colorado. These release compliments totaled 3 rams, 11 ewes and 6 lambs. Hunting seasons were held in 1985-86 with 1 and 2 tags respectively. No rams were harvested in 1985 and 2 rams were taken in 1986. The season was then closed due to the establishment of Great Basin National Park in October 1986 and concerns about declining population trend.

An increasing bighorn population trend was observed in Unit 115 for the last decade, similar to the bighorn population trend in nearby Unit 114. NDOW and Great Basin National Park have worked cooperatively since 2008 with the goal of enhancing both bighorn habitats and the bighorn population in this unit. Over the past two years, six bighorn (2 rams and 4 ewes) were captured and fitted with satellite GPS collars to increase knowledge of seasonal ranges and habitat use by this bighorn herd. The herd is viable enough to support a minimal ram harvest in the short term and possibly longer based on herd performance. A December 20 through February 20 season was established to ensure the tag holder has the opportunity to pursue rams below the Park boundary when they descend from higher elevations in late winter.

Survey Data

This small population is difficult to survey due to the large area, tree-cover and potentially high elevations involved. Observations made during capture operations and NDOW surveys revealed a population of at least 20 bighorn with a strong ram component. Observations made during 2009 captures and NDOW surveys documented at least 11 rams in the population. Similar observations were made in 2010.



Weather and Habitat

Long-term habitat conditions for bighorn sheep have improved in this unit due to a small number of wildfires that burned at mid and upper elevations. A large burned area in Lincoln Canyon receives substantial use by sheep based on data collected from collared bighorn. It is critical that natural fire be allowed to play its crucial role in creating openings in large areas that are dominated by mountain mahogany, pinyon/juniper and other conifers. The BLM and NPS are planning additional projects and a Park fire plan that have the potential to further improve bighorn habitat. Climatic conditions have improved for bighorn sheep over the short term (see discussion in the Unit 114 report above). The removal of 14 mountain lions from this unit within the past 2 years is expected to facilitate bighorn sheep survival.

Population Status and Trend

Better short-term habitat conditions should result in improved body condition and productivity potential for bighorn sheep in Unit 115 for 2011.



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: Caleb McAdoo

Tag Quotas and Harvest Results

There were 19 general season mountain goat tags and 1 PIW tag available in the 2010 season. Of the 20 goats harvested, 40% were nannies. Since 2005, nanny harvest has climbed steadily. Nanny harvest in 2007, 2008, and 2009, was 21, 22, and 30%, respectively (Figure 1). For the last 4 years, the percent of total goats harvested that were nannies has been above the 10-year-average of 20%. Success continues to be good and most hunters reported seeing many adult goats in the 2010 season. For specific 2010 hunting season results, please refer to Harvest Tables in the Appendix Section.

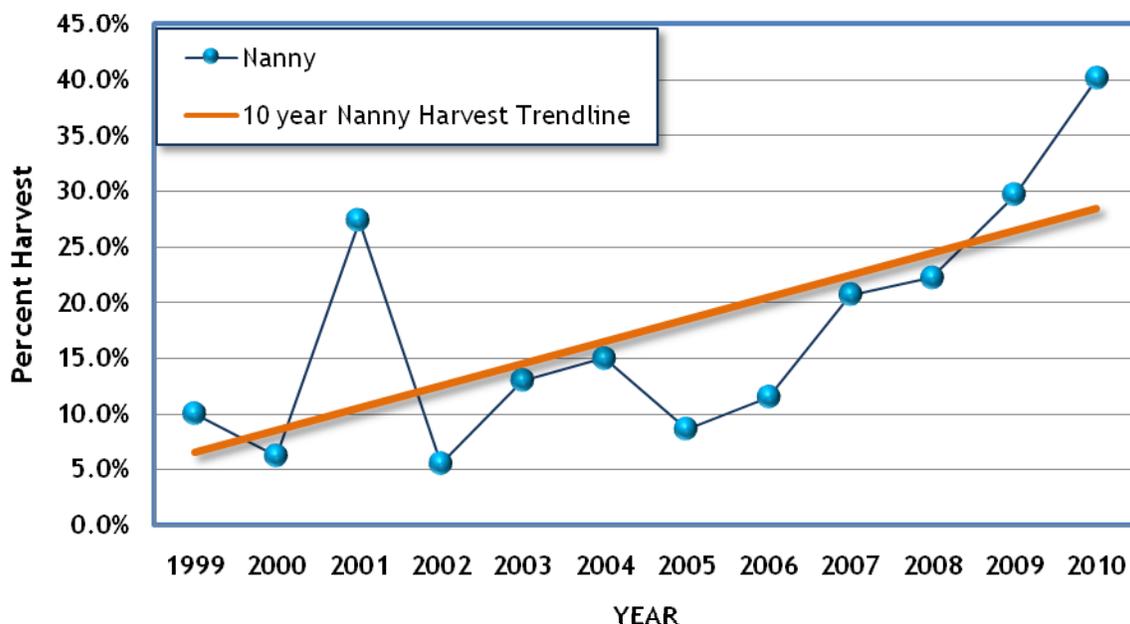


Figure 1. Percent of annual mountain goat harvest that were nannies for all Units 101, 102, and 103 for the years 1999 - 2010.

Survey Data

Mountain goat surveys were performed in August 2010 and late February and early March, 2011. During the August survey a total of 197 goats was observed and classified in Units 101, 102, and 103. In Unit 101, 100 goats were observed, yielding a ratio of 28 kids:100 adults. In Unit 102, 79 goats were observed, yielding a ratio of 18 kids:100 adults. Eighteen goats were observed in Unit 103, yielding a ratio of 20 kids:100 adults.

During the February and March survey, 228 goats were observed and classified in Units 101, 102, and 103. In Unit 101, 93 goats were observed, yielding a ratio of 9 kids:100 adults. In Unit 102, 126 goats were observed, yielding a ratio of 11 kids:100 adults. Nine adult goats were observed in Unit 103, however no kids were observed.



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. As of April 2011, the snowpack remains well above average and should provide the goats with adequate high quality forage on summer range. Many of 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, and/or increase their chances of fatalities from falls and avalanches.

Population Status and Trend

This year, goat populations in Units 101, 102, 103 experienced increased mortality in the kid segment of the population which was likely an artifact of the bacterial pneumonia which afflicted the bighorn sheep and goats in the Ruby and East Humboldt mountain ranges during the 2009-2010 winter. The poor kid recruitment observed in the winter of 2010-2011 exacerbated the population declines realized from the 2009-2010 disease events. Furthermore, increased nanny harvest, as discussed above, created additional concern for the already repressed populations. Consequently, each of the 3 units continued to exhibit population declines. Prior to 2009, all 3 units (101, 102, and 103) had been exhibiting a stable to slightly upward trend.

In an effort to curtail nanny harvest, the Department of Wildlife has initiated a non-mandatory online, "Mountain Goat Hunting Orientation" document to help hunters identify and determine sex of mountain goats in the field. Additionally, the Department continues its disease surveillance for both bighorn sheep and mountain goats in Units 101-103. Hunters who observe any abnormal animal behavior in wild goats or sheep, such as coughing, abnormal nasal discharge, etc. should report their findings to the Nevada Department of Wildlife.



MOUNTAIN LION

Western Region Areas: 1, 2, 3, 4, 5, 18, 19, 20, and 29
Report by: Carl Lackey

Harvest Results

Referencing all available reports for this report period, March 1st, 2010 through February 28, 2011, biologists recorded 79 mountain lion mortalities for the Western Region (Table 1). This included 50 animals taken under valid sport tags and 22 by USDA - Wildlife Services. Total recorded mortalities were above ten-year averages. Sport harvest increased by 51% and Wildlife Service's harvest increased by 83% relative to the 2009 season (Table 4).

Table 1. Western Region mountain lion harvest limits and mortalities by type for 2010-2011.

Unit	Harvest Limit	Harvest Type			
		Sport	Depredation	Other	Total
011-015	Regional 103	4	10	2	16
021-022		4	0	1	5
031,32,34,35		5	3	1	9
041-045		13	0	0	13
051		9	1	0	10
181-184		7	0	0	7
192,194-196		2	0	0	2
201-206		5	7	1	13
291		1	1	2	4
Totals		103	50	22	7

Table 2. Western Region mountain lion sport harvest by unit for 2010-11 and the previous 5 years.

Unit	2005-06	2006-07	2007-08	2008-09	2009-10	Previous 5 yrs Average	2010-11
011-015	5	12	19	6	6	9.6	4
021-022	4	1	1	0	1	1.4	4
031,32,34,35	3	4	5	3	2	3.4	5
041-045	5	9	5	7	5	6.2	13
051	6	5	11	8	4	6.8	9
181-184	0	1	2	4	4	2.2	7
192,194-196	5	11	5	6	7	6.8	2
201-206	6	8	8	4	3	5.8	5
291	2	0	1	0	1	0.8	1
Totals	36	51	57	38	33	43	50

The sport harvest consisted of 26 male lions and 24 females, with average ages of 3.9 and 5.0 years, respectively (Table 3). Approximately 46% (23 of 50) of sport hunters hired professional guides. More female than male lions were taken by these hunters (62% females) and they averaged 4.8 years old. Comparatively, non-guided hunters tagged slightly more male lions (52%) that averaged 3.8 years. Nevada residents took 33 of the lions through sport harvest while non-resident hunters killed 17. Time spent by hunters actively hunting lions was measured by the number of days hunted. The average for the 2010-11 season was 3.0 days/hunter. Hunting with hounds was typically the method most often employed by lion

hunters. Some hunters hoped to fill their lion tag while hunting some other type of big game or small game. This type of incidental harvest was infrequent and accounted for only three lions during this reporting period. Typically most of the cougars killed under authority of a sport tag are taken from fall to late winter when climatic conditions favor hound hunting, but in 2010 western Nevada experienced a wetter and colder spring than normal with snow fall as late as June at the lower elevations. This combined with an unusually high amount of snow in early October provided sport hunters with the opportunity to track cougars for an extended period. Therefore, the fact that seven cougars were taken between March 1 and October 31 was unusual but not surprising. Since its inception the year-round season has had little effect on total overall sport harvest.

Table 3. Western Region mountain lion sport harvest - 10 year sex and age comparisons.

Season/Year	Harvest			Average Age		
	# Males	# Females	Ratio Male:Female	Males	Females	All Lions
2001-2002	27	18	1m:0.6f	3.8	3.5	3.8
2002-2003	20	20	1m:1.0f	4.2	2.8	3.7
2003-2004	18	30	1m:1.6f	4.1	3.5	4.0
2004-2005	22	11	1m:0.5f	4.5	3.2	4.1
2005-2006	15	21	1m:1.4f	3.7	2.6	3.1
2006-2007	25	26	1m:1.0f	3.7	3.3	3.5
2007-2008	33	24	1m:0.7f	3.8	3.1	3.4
2008-2009	24	14	1m:0.6f	3.4	3.7	3.5
2009-2010	19	14	1m:0.7f	4.4	3.4	3.9
2010-2011	26	24	1m:0.9f	3.9	5.0	4.5

Note: two mortalities (unknown sex) in 2008

The United States Department of Agriculture's Wildlife Service's personnel killed 22 lions with a sex ratio of 9 males, 11 females and 2 of unknown sex. The average age of these lions was 3.2 years. Fourteen of the 22 lions killed by Wildlife Services were depredateing lions responsible for killing a total of 40 sheep with a reported value of \$8,150.00. Six of these were taken on a ranch along the East Walker River in Area 20. This ranch known for depredation issues has had 21 lions removed in the last 11 years. The other 8 lions taken by Wildlife Services in 2010 were killed for predation management projects in northern Washoe County.

All salvageable lion hides from around the state were skinned, dried and then sold at the Nevada Trapper's Association's annual fur sale in Fallon. A total of 28 hides were sold this year bringing an average price of \$238 with a high of \$600.

Population Trend

Population structure and trends were based on harvest data and reports from guides and hunters. Major shifts in sex ratios or age cohorts were absent suggesting the lion population in western Nevada is stable (Table 3).

NDOW is currently working with the University of Nevada, Reno on a cougar research project in the Western Region. To date, 25 lions have been fitted with radio-telemetry collars. DNA samples have been taken from harvested lions throughout the state and are being fingerprinted as a portion of the ongoing study to establish a map representing genetic flow of mountain lions in Nevada.

Management Conclusions

Although there are some yearly fluctuations within harvest categories, the average ages and ratio of males/females killed has not changed significantly over past years. When evaluating harvest rates for the last ten years compared to the previous ten-year period (1991-2000), the averages have increased

somewhat but remain within the yearly fluctuations expected. For example, the sport harvest in the 2009-2010 season was about the same as the average from 1991-2000. The same holds true for the total harvest category (Table 4). And even though the change in total harvest from the 1991-2000 period to the 2001-2010 period represents an increase of 31%, total harvest figures for 4 out of the last 10 years are about the same as the 1991-2000 average. Data indicate regulations and harvest limits are compatible with the lion resource and its capability to support sport harvest.

Table 4. Ten-year Western Region mountain lion harvest trend-all known mortalities.

Season Year	Season Length	Harvest Limits	Harvest Type				
			Sport	Depredation	Other	Total	
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	
2008-2009		114	38	12	2	52	
2009-2010		103	33	12	2	47	
2010-2011		103	50	22	7	79	
10 year avg.		NA	NA	42.5	12.1	4.7	59.3
Previous 10 year avg. (1991-2001)		218	77	33.2	8.7	3.1	45.0

Eastern Region: Areas 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15
Report by: Scott Roberts

Harvest Results

The Eastern Region maximum allowable sport harvest for the 2010-11 season was 143 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 and the remaining 139 were allocated to the rest of the Eastern Region hunt units. No area closures took place in 2010-11.

The Eastern Region sport harvest for mountain lions for the 2010-11 season totaled 71 animals (Table 1). Included in this number were 3 lions that were taken as part of a Nevada Wildlife Heritage Project. The project was the first of its kind in the state that allowed an individual to receive payment for lion removal using his and his family's lion tags. Because the lions were legally tagged and retained by the hunters, the lions were considered sport harvest. The sport harvest for the previous year (2009-10) was 74. Guided hunters made up 37% of the region's annual sport harvest. The 2010-11 sport harvest composition was 49 males and 22 females for a ratio of 2.2 males:female. The sport harvest ratio for the 2009-10 season was 1.2. The average sport harvest for the previous 5 years (2005-2009) was 60 lions. Average sport harvest reported during those same 5 years averaged 37 males and 23 females for a ratio of 1.6 males:female.

The total documented mountain lion harvest for the Eastern Region in 2010-11, including all known causes of take was 87 lions. The annual harvest was comprised of 57 males, 29 females, and 1 lion of unknown sex being removed from the population.

Table 1. Eastern Region sport harvest by area groups for 2010-11 and previous 5 years.

Area Group	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
66	2	0	3	1	1	4
061-068	10	4	6	13	19	13
65	0	2	3	2	1	1
071-081	17	11	8	3	6	10
91	1	1	0	0	0	0
101,105,106,107	3	1	6	0	1	3
102,103,104,108	5	7	1	6	13	18
111, 112	8	7	8	7	9	4
113,114,115	4	5	3	6	8	4
121	5	7	1	3	6	2
131-134	0	0	2	0	3	1
141	0	1	1	2	0	0
142-145	2	7	7	4	6	3
151,152,154,155	2	3	6	7	1	8
Eastern Region Total	59	56	55	54	74	71

Depredation and Other Harvest

Depredation issues in 2010-11 resulted in the removal of 13 lions compared to 18 in 2009-10 (Table 2). Two of these lions were removed by USDA Wildlife Services at the request of NDOW for the protection of Rocky Mountain Bighorn Sheep in Unit 114. Depredation harvest for the last 10 seasons has averaged 10 lions per year (Table 4).

The Other Harvest for the 2010-11 season was comprised of 1 instance of self defense by a chukar hunter, 1 road kill, and 1 lion shot by the Eureka County Sherriff Department as a public safety concern. Other Harvest for the last 10 seasons has averaged 4 lions per year (Table 4).

Table 2. All Eastern Region mountain lion mortalities by type / distribution for 2010-2011.

Management Area Groups	Maximum Allowable Sport Harvest	Sport Harvest	Depredation Harvest	Other Harvest	Total Harvest
066	Regional	4	0	0	4
061-068	139	13	1	1	15
065		1	0	0	1
071-081		10	1	0	11
091	4	0	0	0	0
101,105,106,107	Regional	3	1	1	5
102,103,104,108	139	18	1	0	19
111, 112		4	0	0	4
113,114,115		4	3	0	7
121		2	1	0	3
131-134		1	2	0	3
141		0	0	0	0
142-145		3	2	1	6
151,152,154,155		8	1	0	9
Totals:	143	71	13	3	87

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 over the last 12 summers have converted tens of thousands of acres of deer habitat to vegetation dominated by grasses and annuals in the Eastern Region. Some deer summer ranges, and more importantly, some critical 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. The protection of intact deer winter ranges and the rehabilitation of degraded areas will be paramount in maintaining both deer and lion populations. Documented mortality in the form of harvest and accidental loss has not exceeded the reproductive/recruitment capabilities of the mountain lion resource.

Lion harvest has been under close scrutiny by some 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. Population is not directly proportional to harvest as many factors can influence harvest pressure and effort. For example; factors such as weather conditions, level of interest, economics, etc. can have an affect annual lion harvest. Age and sex structure is a good measure of lion populations. Over-harvest will result in obvious age structure changes. (e.g., the number of mature males harvested will drop while the number of adult females and sub-adult males in the harvest will increase).

The average age of lions taken by sport hunters in the Eastern Region was 3.6 which is a slight drop from the ten-year-average age of 4.0 years. One possible explanation for this slight drop in average age was the fact that many of the incidental harvest and Heritage project lions were ≤ 1 years-old. The average age of all recorded lion mortalities was 3.6 and includes sport harvest, depredation harvest, and other mortalities (Table 3). The overall sex ratio for all known mortalities was 2.0 males: female compared to 1.2 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 1999.

Season Year	# Males Harvested	# Females Harvested	Average Age Males	Average Age Females	Average Age All Lions
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
2007-08	31	24	3.8	3.8	3.8
2008-09	38	16	4	4.1	4.1
2009-10	40	34	3.8	3.8	3.8
2010-11	49	22	3.7	3.2	3.6

Management Conclusions

Hunter interest and participation remained high in the Eastern Region. The majority of lions were taken in December, January and February, with 76% of the total lions being harvested during these peak months. There was a considerable amount of variability in snow and tracking conditions in the Eastern Region

during the 2010-11 season. The maximum allowable sport harvest objective for the Eastern Region was 143. Sport hunters took 71 lions including 3 lions taken on the Heritage Project contract. No area closures took place in 2010-11 and a potential harvest of 72 lions was still available to hunters in the Eastern Region.

Mountain lion population trends are stable within the Eastern Region. Although some of the more accessible and popular lion hunting areas may hold depressed populations, 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 moderates the effects of harvest in more heavily hunted 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. Body condition was rated from good to excellent on 92% of the sport harvested lions in the Eastern Region during the 2010-11 season. This and other indices demonstrate both healthy individuals and a healthy overall population.

Table 4. Ten year Eastern Region mountain lion harvest trend - all known mortalities.

Season Year	Season Length	Maximum Allowable Sport Harvest	Sport Harvest	Depredation Harvest	Other Harvest	Total Harvest
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
2008-09	365	167	54	11	3	68
2009-10	365	143	74	18	6	98
2010-11	365	143	71	13	3	87
Averages	350	161	71	10	4	85

Southern Region: Areas 16, 17, 21, 22, 23, 24, 25, 26 and 27
Report by: Mike Scott

Harvest Results

The 2010-2011 mountain lion season ran from March 1, 2010 through February 28, 2011 in all areas of the Southern Region, with the exception of Area 28, which remains closed to mountain lion hunting. The harvest limits in all areas were combined to form a regional maximum harvest limit of 60 lions. Table 1 displays a comparison of harvest for the last ten years. Table 2 displays the regional lion harvest for the 2010 -2011 season.

Table 1: Comparison of Southern Region Harvest by area groups for the last ten years

Area Group	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
161-164	1	0	6	0	4	5	6	3	11	8
171-173	9	5	7	3	7	10	10	8	4	4
211-212	0	0	0	0	0	2	1	0	0	0
221-223	5	4	7	5	4	1	6	6	3	6
231	7	6	4	0	5	1	1	6	2	4
241-245	3	3	2	2	3	4	5	4	4	7
251-253	0	0	0	0	0	0	1	3	1	1



Area Group	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
261-268	1	2	3	3	0	2	4	2	0	1
271-272	0	0	0	0	0	2	0	0	0	0
Totals	26	20	29	13	23	27	34	32	25	31

Table 2: All Southern Region Mountain Lion Mortalities by Type/ Distribution for 2009-2010

Management Area Groups	Harvest Limit	Sport Harvest	Depredation Harvest	Other Harvest	Total Harvest
161-164	<i>Regional</i>	8	0	0	8
171-173		4	0	0	4
211-212		0	0	0	0
221-223		6	0	0	6
231		3	1	0	4
241-245		3	4	0	7
251-253		0	0	1	1
261-268		1	0	0	1
271-272		0	0	0	0
Totals:		60	25	5	1

Regional sport harvest for the 2010-2011 season consisted of 25 lions which equals the 25 sport harvest lions taken during the 2008-2009 and 2009-2010 seasons. Four lions were removed from the Delamar Mountains by Wildlife Services to protect bighorn sheep. One young lion was shot at a residence in Area 23. Regional depredation complaints have averaged 3 per year (range 0 to 9) during the last 10 seasons (2001-2011).

Population Trend

The 2010-2011 Southern Region mountain lion sport harvest consisted of 13 males and 12 females for a male to female ratio of 1.1. The 5-year average male to female ratio is 1.0. The average age of lions taken during the 2010-2011 season was 5.2 years for males (compared to 5.0 in 2009-2010) and 3.8 years for females (compared to 4.5 in 2009-2010). The number of lions taken (31) in 2010-2011 was higher than the long term (10-year) average of 25 lions annually. The increase can be explained by the one depredation lion being taken, four lions harvested for the NDOW predator project on the Delamar Range and one lion dying from trauma within the Nellis Test Range. The Southern Region combined harvest was well below the 2010-2011 harvest limit of 60.

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
2008-2009	11	14	3.2	3.3	3.24
2009-2010	13	12	5.0	4.5	4.8
2010-2011	13	12	5.2	3.8	4.6

Table 4: Ten Year Southern Region Mountain Lion Harvest Trend - All known mortalities.

Season Year	Season Length	Harvest Limits	Harvest Type			
			Sport	Depredation	Other	Total
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
2008-2009	365	68	25	3	4	32
2009-2010	365	60	25	0	0	25
2010-2011	365	60	25	5	1	31
Averages:	350	66	24	3	1	28

Management Conclusions

The sport harvest of mountain lions equaled the previous years' sport harvest of 25 lions. Five other lions were taken in the southern region during the reporting period, and one died of natural causes. Total combined harvest was below the regional harvest limit. Above average precipitation was received throughout the Southern Region during 2010, which should result in increased availability of prey species. The western portion of the Southern Region (Areas 16 & 17) accounted for 40% of the Southern Region lion harvest compared to 60% in 2009-2010. Body condition was rated from good to excellent on 92% of the sport harvested lions in the Southern Region during the 2010-11 season. Average age of males and females indicate a healthy population and most hunters report seeing multiple lion tracks during their hunts. These and other indices demonstrate both healthy individuals and a healthy overall population.

BLACK BEAR

Western Region

Report by: Carl Lackey

This status report contains information for the 2010 calendar year. Specific data on all black bears handled by department personnel was first recorded in 1997 with a sample size of 5 individuals. Subsequent yearly samples for the last ten years are depicted in Table 1. These figures are for all bears handled including recaptures and documented mortalities.

Table 1. Bears handled in the Western Region 2001-2010.

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
38	43	44	69	74	88	158	68	40	78	815

Includes recaptured bears previously handled and marked in the same or preceding years.

Conflicts

In 2010 bear complaints increased 77% above 2009 figures. It was the second highest number of complaints on record (2007). NDOW personnel handled approximately 440 complaints and reports of bears in the calendar year 2010. Yearly complaints vary in number depending on climatic conditions and other factors but when the complaint history is viewed as 5-year periods, it is clear that complaints continue to rise (Figure 1).

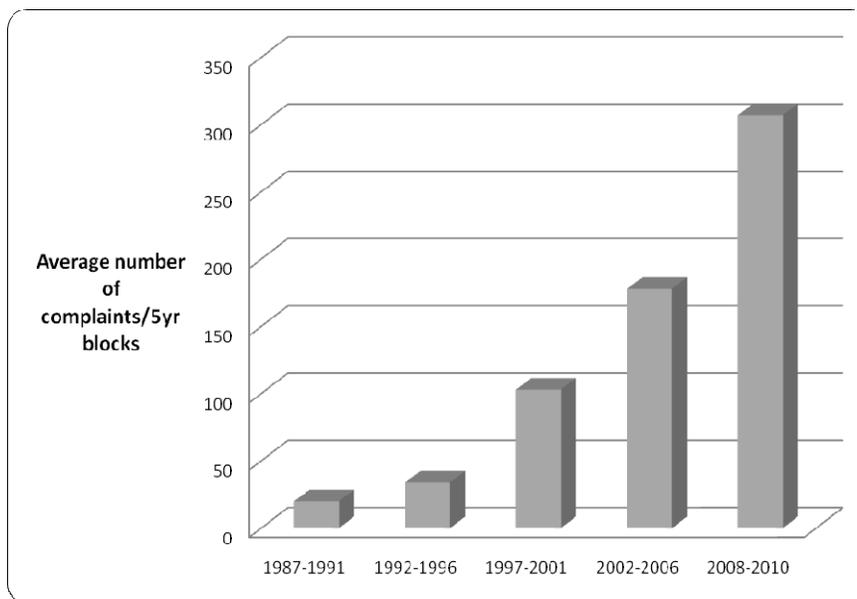


Figure 1. Bear complaints per 5 year period.

Note: 2007 - the record high - was excluded from the graph

In most cases the usual course of action was for dispatch to offer advice on reducing bear conflicts through proper storage and disposal of garbage and removal of other attractants. However, if there was evidence of severe property damage or an increased risk to human safety, then calls were forwarded to the bear biologist, or in his absence, a game warden. Law enforcement personnel typically handle a small percentage of the overall calls but in 2010, wardens handled a much larger percentage of calls, predominantly in the late summer and fall periods. The majority of complaints received pertained to nuisance bears accessing garbage. Other common complaints were bears

breaking into garbage enclosures or sheds, damage to fruit trees, bears breaking into homes and vehicles and bears frequenting a particular area. All of these were directly related to bears having access to human foods, which historically accounts for >95% of the total number of calls received.

The summer months were typically the busiest for bear complaints due to drying habitat conditions and an increase in human traffic/tourism in the Lake Tahoe Basin. However, in 2010 the fall and summer each



accounted for approximately the same number of bear calls. The reason for this was likely a result of the winter weather conditions that persisted until early summer which probably caused a failure in fruiting shrubs and trees. These food resources were therefore likely not available in abundance during the fall when bears enter hyperphagia.

Complaints were predominantly from Washoe County (56%), and most of these were from Incline Village which accounted for 30% of all calls received in Washoe County (Figure 2). Property damage for the year was reported at only \$4,000 but it should be noted that most people don't report damage unless it is significant and even then these figures are not often recorded.

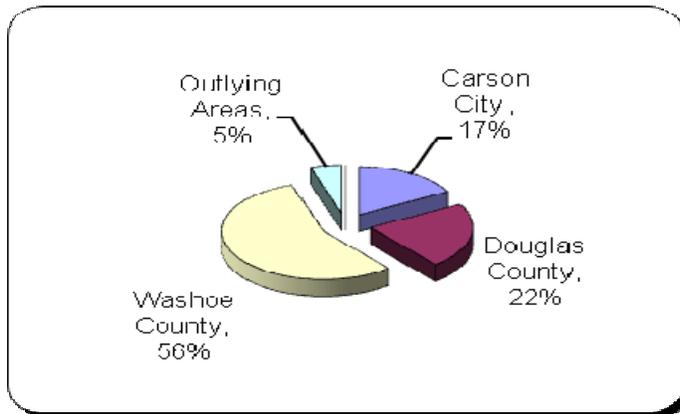


Figure 2. Black bear complaints by county of origin.

Sixty-six individual bears were handled in approximately 77 events (includes recaptures), including nine bears that were captured for research purposes only. Of the 66, 37 were new bears (those not previously captured or handled). Additionally, some bears were caught incidental to ongoing complaints but not necessarily as conflict bears.

Twenty-one of the new bears handled were tagged and released, while 16 were documented as mortalities on the initial incident (unknown bears hit by vehicles, etc).

An account of age cohorts for all new bears handled is summarized below in Table 2 which contains figures for both conflict and research captured bears. 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. Four cubs of the year were handled but two could not be sexed. Three orphaned cubs from 2009 were placed into man-made dens after spending the winter at a rehabilitation facility near Winnemucca. Ideally yearling cubs such as these would weigh 60-90 pounds. These cubs were substantially overfed and weighed about 200 pounds in March 2010 when placed into the dens. This more than likely contributed to the post-release behavior of two of the three, which began frequenting parts of Carson City and causing damage and therefore had to be euthanized.

Table 2. Number sampled, age cohort and sex of all new bears for past 10 years with average age for adults.

Age cohort	Sex	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cubs ≤ 12mo.	♂	2	2	4	8	7	9	12	5	5	1?
	♀	2	5	4	8	3	4	17	2	0	1?
Sub-adults 1 - 3 yrs	♂	8	4	4	7	9	8	25	12	4	3
	♀	2	3	5	1	5	6	11	4	3	8
Adults 4+ yrs / Avg. Age	♂	5 @ 6.4	6 @ 8.2	3 @ 7.0	2 @ 7.5	2 @ 6.5	17 @ 6.2	21 @ 7.6	5 @ 5.2	6 @ 5.2	13 @ 6.2
	♀	5 @ 7.8	8 @ 9.4	2 @ 7.5	6 @ 6.5	2 @ 11.0	5 @ 7.8	23 @ 8.9	1 @ 6.0	2 @ 13.5	8 @ 6.6

The Department's public education program titled *I'm Bear Aware - are you?* has remained static over the last three years due to funding shortfalls. Handout materials are limited to stock on hand. Regardless, several public presentations were given throughout the year.



Mortalities

There were only 34 documented mortalities recorded this year, (Table 3) and 18 of these were known bears (recaptures). The total consisted of 22 males, 10 females and two cubs of unknown gender. Eight were killed as a result of collisions with vehicles. NDOW had to kill 20 bears in deference to public safety for breaking and/or entering homes or as chronic nuisance bears (13 males and 7 females). This was the highest recorded number of bears killed by NDOW in a given year. Anthropogenic reasons other than legal hunting are the leading cause of documented bear mortalities in Nevada.

Table 3. Documented Mortalities 2001-2010

Mortality Type	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Hit by Car	6	13	4	9	14	22	35	6	8	8
Public Safety	1	5	2	3	1	4	10	17	3	12
3 - Strikes	NA	NA	NA	NA	NA	NA	1	6	3	8
Depredation	1	1	0	0	2	5	5	1	0	2
Illegal	2	0	0	0	0	0	3	0	0	1
Other	0	1	4	1	0	1	8	2	1	3
Total	10	20	10	13	17	32	62	32	15	34
Cumulative Total (since 1997)	58	79	89	102	119	151	213	245	260	294

Marked Nevada bears killed in other states (16 since 2001) were not recorded in Table 1.

Research

Satellite collars were deployed on nine female black bears during 2010. Two of these bears died shortly thereafter. One previously collared bear slipped her collar. We are currently monitoring 11 active collars, all on adult or sub-adult female black bears. Numerous collar failures have plagued this particular project with either the satellite or vhf collar components failing at some point on almost every collar. As a result only one of the collared bears was danned successfully in 2010. Nonetheless, valuable data on reproduction and habitat use has been successfully collected. This project continues with funding from the Wildlife Conservation Society.

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 \$4,256. For all operating accounts (Category 58) a total of \$5739.85 was expended in calendar year 2010 for bear management related activities. Expenditures for salary and mileage are not included in these figures.

Summary

In the fall of 2010 the Wildlife Commission requested an analysis of bear data to determine if Nevada's bear population could withstand a limited recreational harvest. This analysis had already begun and was completed by October. Relying on the results the Wildlife Commission approved Nevada's first legal bear season at their December meeting. Seasons and quotas were set at the February 2011 commission meeting.

A statistical analysis completed with help from Dr. James Sedinger of the University of Nevada, Reno indicated the bear population is increasing at a moderate rate despite an average of 23 bears killed annually for anthropogenic reasons. A population estimate was derived along with adult annual survival rates and an annual estimated rate of increase. A complete review of the analysis and results was



prepared in early 2011 entitled “Black Bear Population Assessment Methodology and Data Analysis in Nevada - A Review - Nevada Department of Wildlife - 2011.” Based on this analysis Nevada’s bear population in the study area (core population) was estimated to be between 200-300 adult animals at the end of 2008. The estimate for Nevada’s portion of the Sierra black bear population has been determined to be conservative because of the following : (1) heterogeneity in the capture probabilities - not all bears had an equal chance of capture; (2) the population estimate represents the core population as described above, but viable populations exist elsewhere and were not represented proportionately in the data set; and (3) 223 bears captured in Nevada were removed from the analysis because of the criteria chosen, even though they were part of the population at the time of their occurrence.

Information gathered from tagged bears has proven informative over the last few years. Not only were some bears captured again in Nevada after being marked several years previous but some bears traveled significant distances from Nevada and the area of initial capture. Harvest data from other states consists of the following: a dispersal age male bear tagged near Washoe Valley and later killed in the sport hunt two years later 20 miles north of Lakeview, Oregon; a nuisance bear shot by California authorities roughly 80 miles north of Susanville, California; and at least two other bears shot by California hunters after crossing the Sierra Nevada Range, one in Auburn and one closer to Sacramento.

Nevada’s black bear population is doing well and indications are that it is increasing in abundance and distribution. Climatic conditions in the fall and winter of 2010-11 will favor production of forest shrubs and grasses if they do not freeze again in late spring of 2011.



