

# NEVADA

## PREDATION MANAGEMENT PLAN

### FY 2008



Mule Deer Fawn Predated by a Mountain Lion

***PREPARED BY: CRAIG MORTIMORE/KEVIN C. LANSFORD  
JUNE 2008***



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# **Nevada Predation Management Plan**

## **Fiscal Year 2008**

### **July 1, 2007 - June 30, 2008**

#### **Summary**

The Nevada Board of Wildlife Commissioners (Commission) approved six predation management projects within the *Fiscal Year (FY) 2007 Predator Management Plan (PMP)* on August 5, 2006. Project 6A was initiated within the FY2002 Plan and was recommended to continue into FY2007. Projects 14 & 15 began in FY2004 and were recommended to continue into FY2007. Both are five-year projects with conclusion dates in FY2008. Also approved within last year's plan were projects 17 & 18, which were initially accepted through the FY2005 Plan. These five year projects will conclude in FY2009 and are again recommended for funding in FY 2008. The sixth project was project 19, the Winters Creek/Marble Canyon emergency fire project. The project was initiated to protect species affected by the 2007 fires in area 6 of Elko County. The intent was to reduce mortality of these species due to possible increases in primary and secondary predator impacts.

Project 19 management activities included aerial hunting of coyotes and raven removal using DRC-1339, to protect several species of concern including antelope, mule deer, bighorns sheep and sage grouse. We recommend that Project 19 funding be continued to address continuing fire impacts in Area 6, and also that this project be expanded to include burned habitat in Area 7 (e.g., Unit 071). We further recommend that the Commission set aside funding to address other emergency needs as these arise around the state.

Although not a Project, in February 2007, the Virgin Mountains Bighorn Sheep investigation was initiated in response to a situation in the Virgin Mountains involving the loss of multiple bighorn sheep in a short period of time as a result of predation. Project summaries are provide later in this report.

The Commission also provisionally approved three other projects on a provisional basis. These were: *Pending Project A: Predator Control to Protect Turkey Augmentations on Mason Valley Wildlife Management Area* – a project that NDOW and the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) through its Wildlife Services (WS) branch had collaborated on prior to the formal planning process. *Pending Project 6B: Protection of Desert Sheep: East Walker River* is also a project that had been cooperatively undertaken by APHIS and NDOW in the past. Finally, *Pending Project C: Protection of Desert Bighorn Sheep: Excelsior Range* was a new recommendation and was designed to alleviate predation impacts created by the malfunction of a water development (guzzler). All projects were approved for FY 2007 but the provisional status was that a funding source had to be sought outside of the predator fund established through the passage of Assembly Bill 291.

The 2008 PMP provides a brief synopsis of the FY 2007 predator management projects. Complete history of all the projects can be found in the NDOW document entitled: *A Program*

*Overview - Nevada Predator Management Plan - A Report to the Nevada Board of Wildlife Commissioners' Wildlife Damage Management Committee.* This comprehensive report was prepared by NDOW to describe the history of the Predator Management Program, including description of management applications, a documentation of deliverables, an accounting of budget commitments and analysis of project goal-completion. This document was provided to the Commission's Wildlife Damage Management Committee in 2006 and is available online at [ndow.org](http://ndow.org).

## ***FY 2007 Project Status – Projects Funded for Continuation***

### **Project 6A: Protection of Desert Bighorn Sheep: Delamar Mountains**

**Project Inception:** 2002

**Project Conclusion:** *not determined*

**Project Area:** Lincoln County - Delamar Mountains. North & South Pahroc Ranges and Hiko Range were added to the project area in FY2005.

**Target Predator:** Mountain Lion. In FY 2008, and as deemed necessary based on historical accounts of predation, bobcats and coyotes were added to the target list.

**Predator Control Action:** WS hunts lions using dogs and other control tools such as a call box and snares. Bobcats and coyotes will be targeted on a case by case basis using calling, shooting, leghold traps and snares, to remove offending animals.

**Control Period:** September – March for lions, as needed for bobcats and coyotes.

**Beneficiary Species:** Desert Bighorn Sheep.

**Desired Result:** Translocated bighorns can establish a viable population within this portion of their former range. Reduction of predators will result in improved survival of all age classes. Minimal predation upon mature females contributes to higher total annual production and minimal predation upon the lambs they produce contributes to higher annual recruitment.

**Evaluation Period:** year-round

**FY2007 Expenditures:** WS-Nevada had proposed a budget authorization in the amount of \$9,104 to conduct mountain lion removal within the Delamars during FY2007. Total expenditures amounted to \$9,104 for the fiscal year. However, across the board increases with revised travel and per-diem rates increasing are expected.

**FY2007 Summary of Control Activities:** In FY 2007 no lions were removed on this project. Wildlife Services conducted intense surveys on multiple occasions overlapping the months historically documented as months where lion predation was most likely to occur, November through March.

**FY2007 Summary of Measured Outcomes:**

The Delamar Bighorn population continues to struggle to achieve the numbers necessary to sustain a viable population. Despite the release of nearly 100 bighorns into the area and the installation of seven water developments, the population has failed to thrive. Predators and drought have both had detrimental effects on this population. The following table shows survey results from 2001-2006.

<i>Year</i>	<i>Rams</i>	<i>Ewes</i>	<i>Lambs</i>	<i>Total</i>
<b>2001</b>	16	17	5	38
<b>2002</b>	3	15	3	21
<b>2003</b>	7	12	2	21
<b>2004</b>	5	15	5	25
<b>2005</b>	5	19	3	27
<b>2006</b>	5	7	1	13

**Conclusions:** Three lions have been removed to date. The initial large tom that was removed in 2002 was a considerable achievement as the lion was elusive, only periodically in the work area and had been utilizing area bighorns as a food source for several years. The second lion removed in 2006 was also linked to two deaths of bighorns in the area. We know of three confirmed incidents of bobcats preying on bighorn sheep, two of which occurred in Delamars. (*The other occurred in 2007 on the Virgin Mountains discussed later*). A large portion of the Delamar Range was declared wilderness in the Lincoln County Lands Act of 2004. Access for trappers is severely reduced, which likely results in higher bobcat densities than adjacent areas where trappers have good access. The project is designed to mitigate bighorn losses to predation until such time that the herd has reached a threshold level where such losses are overcome by recruitment.

The project has gathered important information concerning lion use patterns, season of use, general densities, as well as pinpointing windows when lions and bighorn sheep overlap in their use patterns providing the opportunity for a more surgical approach to lion removal. This, in turn, has led to a better understanding of how to more efficiently and effectively allocate personnel as well as resources.

**Recommendation for FY2008:** Continue with Project 6A.

**Proposed Budget for FY 2008** (see table on last page): WS - \$11,835; NDOW- \$0

**Project 14: Wilson Creek-White Rock  
Coyote Control to Enhance Deer Fawn Production.**

**Project Inception:** FY 2004

**Project Conclusion:** FY 2008 (5 year project)

**Project Area:** Management Unit 231, Lincoln County.

**Target Predator:** Coyote

**Predator Control Action:** WS to remove coyotes through aerial gunning, traps, calling, denning, & snares.

**Control Period:** Control focused on high elevation fawning grounds during March through August. Control on summer and winter ranges other habitat will also occur August through February. This project is supported by a year-around WS Wildlife Specialist.

**Desired Result:** Mule deer should increase as fawn survival improves through the elimination or diminution of coyote predation.

**Evaluation Period:** Mule Deer population and fawn production levels from before, during and after the project will be compared to help assess the effectiveness of the project. An age structure analysis will be conducted on coyotes during the course of the project to help determine coyote population dynamics. NDOW will monitor fall fawn ratios. Final evaluation will occur at the end of the project.

**FY2007 Expenditures:** WS-Nevada had proposed a budget authorization in the amount of \$10,560 to conduct coyote removal within the treatment area during FY2007. Expenditures amounted to \$10,552 for the fiscal year. NDOW did not record any expenditure for the report period.

**FY2007 Summary of Control Activities:** WS-Nevada reported the removal of 92 coyotes from the ground and 116 by aerial hunting during the report period. To date 639 coyotes have been removed. Coyote age is determined through collection/analysis of canine teeth. FY 2007 tooth analysis data will be available sometime after August 2007. FY 2007 teeth will be submitted for analysis in July 2007.

**FY2007 Summary of Measured Outcomes:**

<b>Table 1. Observed Fawn/Doe Ratios for Project 14 Treatment Area</b>								
Survey	Unit Group:	1985-1994	1995-2004	1999-2003	2004	2005	2006	2007
Post-season	231	.425	.396	.376	.433	.667	.439	N/A
Spring*	231	.371	.375	.385	.429	.343	.619	.413

**Conclusions:**

Observed post-season fawn ratios improved considerably in FY 06 compared to the previous year and the average leading into 2005 suggested enhanced initial survival. More importantly, spring fawn ratios, which are an index of recruitment, likewise improved against these same comparables. However, this phenomenon was repeated within adjacent areas where limited livestock control actions had been implemented. It is reported that habitat conditions during the report period were excellent due to above average precipitation following a prolonged dry period.

**Recommendation for FY2008:** Continue with Project 14. (Five-year Project)

**Proposed Budget for FY 2008:** WS - \$79,257; NDOW- \$500

**Project 15: Horse and Cattle Camp Loop, Schell Creek Range  
Coyote Control to Enhance Mule Deer Fawn Production**

**Project Inception:** FY 2004

**Project Conclusion:** FY 2008 (5 year project)

**Project Area:** Management Unit 222, White Pine County. North of Patterson Pass to the northern border of the unit.

**Target Predator:** Coyote

**Predator Control Action:** WS to remove coyotes through aerial gunning, traps, denning, calling & snares.

**Control Period:** Control focused upon high elevation fawning grounds during March through August with a full-time WS Wildlife Specialist. Control on summer and winter ranges will also occur August through February in the form of aerial hunting.

**Desired Result:** Mule deer numbers should increase as fawn survival improves through the removal or diminution of coyote predation.

**Evaluation Period:** Mule Deer population and fawn production levels from before, during and after the project will be compared to help assess the effectiveness of the project. An age structure analysis will be conducted on coyotes during the course of the project to help determine coyote population dynamics. NDOW will monitor fall fawn ratios. Final evaluation will occur at the end of the project.

**FY2007 Expenditures:** WS-Nevada had proposed a budget authorization in the amount of \$8,640 to conduct coyote removal within the treatment area during FY2007. Expenditures amounted to \$5,840 for the fiscal year. NDOW did not record any expenditure for the report period.

**FY2007 Summary of Control Activities:** WS-Nevada reported the removal of 99 coyotes during the report period. Total coyotes removed during the three years amounts to a total of 340 animals. Coyote teeth have not yet been submitted for age analysis.

**FY2007 Summary of Measured Outcomes:**

<b>Table 1. Observed Fawn/Doe Ratios for Project 14 Treatment Area</b>								
Survey	Unit Group:	1985-1994	1995-2004	1999-2003	2004	2005	2006	2007
Post-season	221-223	.387	.374	.388	.357	.426	.443	N/A
Spring*	221-223	.329	.345	.375	.359	.274	.544	.425

**Conclusion:**

Observed post-season fawn ratios improved considerably in FY 06 compared to the previous year and the average leading into 2005 suggested enhanced initial survival. More importantly, spring fawn ratios, which are an index of recruitment, likewise improved against these same comparables. However, this phenomenon also occurred within adjacent areas where limited livestock control actions had been implemented. It is reported that habitat conditions during the report period were excellent due to above average precipitation following a prolonged dry period.

**Recommendation for FY2008:** Continue with Project 15. (Five-year Project). Further analysis may support the need to combine projects 14 & 15, using units 222 and 231 as treatment areas to compare against control areas identified for Project 14 plus Unit Group 114-115.

**Proposed Budget for FY 2008:** WS - \$30,393; NDOW- \$500

## Project 17: Elko County Deer & Elk

**Project Inception:** FY 2005

**Project Conclusion:** FY 2009 (5 year project)

**Project Area:** South-central Elko County.

Treatment Area: East Humboldt Range - units 101, 105 & 107

Control Area: Ruby Mountains – units 102, 103, 104 & 108

**Target Predator:** Coyote, Mountain Lion

**Predator Control Action:** WS to remove coyotes and lions using all practical means.

**Control Period:** Control activities are deployed as follows:

<u>Unit</u>	<u>Season of Control</u>	<u>Protected Species</u>	<u>Target Species</u>
101	Spring, summer	Mule deer	Coyotes, lions
105	Spring, summer	Elk	Coyotes, lions
105/107	fall, summer	Mule deer	Coyotes, lions

**Desired Result:** Mule deer numbers should increase as fawn survival improves through the removal or diminution of coyote predation. Elk calf ratios are low in Unit 105. The project management activities may also improve recruitment in the elk herd.

**Evaluation Period:** NDOW shall conduct post-season mule deer aerial surveys and winter aerial elk surveys within the project area each year of the project. Composition of the findings shall reveal fawn survival from parturition to approximately five months old and calf survival into the winter.

**FY2007 Expenditures:** WS-Nevada had proposed a budget authorization in the amount of \$71,138 to conduct coyote and mountain lion removal within the treatment area during FY2007. Expenditures amounted to \$71,138 for the fiscal year. This project relies on considerable aerial hunting, which accounts for much of the expense.

**FY2007 Summary of Control Activities:** WS-Nevada reported the removal of 503 coyotes during the report period. Total coyotes removed during the two years amounts to 1391 coyotes as well as 9 mountain lions. Coyote age analysis is not done for this project, but there have been some interesting findings. Three coyotes were estimated at over 10 years of age. One was a female estimated at 10 years old: she was captured in February with 13 fetuses in her ovaries.

**FY2007 Summary of Measured Outcomes:** NDOW was able to gather post-season and spring mule deer composition data during the report period for the project area and for the control area. These are reported as follows:

Survey	Unit Group:	1989-1994	1995-2004	2000-2004	2004	2005	2006
Post-season	101, 105, 107	50	46	44	45	34	40
	102, 103, 104 & 108	50	46	43	40	29	39
Spring*	101, 105, 107	34	33	33	39	28	39
	102, 103, 104 & 108	34	36	35	40	30	31

\* Results reported for “Spring” surveys are from survey activities conducted in the Spring following the corresponding “Post-Season” survey and therefore are actually conducted in the subsequent calendar year, one year greater than the year in the column heading.

	2001	2002	2003	2004	2005	2006	2007
Pop. Estimate	180	180	170	160	160	190	220
Calves/100♀	57	31	26	12	24	25	46

**Conclusions:**

Predator control activities again resulted in the removal of many coyotes during FY2007. Total predator removal is impressive on face value, with Wildlife Services removing approximately 1390 animals in just two and a half years. Sport lion harvest has remained high in Area 10 with more lions removed in the control area than the treatment area. Lion harvest in eastern Area 10 (the treatment area) was much less than in the remainder of the area and biologists surmise that deer density (prey) is a factor.

Post-season mule deer fawn ratios, although still low compared to long-term averages increased in both the treatment area and the control area in 2006. Fawn ratios increased by 10 fawns per 100 adults from last year in the control area (29 to 39) and increased by 6 fawns per 100 adults in the treatment area (34 to 40). Despite the larger increase in fawns in the control area than the treatment area during post-season surveys, the treatment area had higher fawn ratios (39) than the control area (31) in the following spring as a likely result of lower winter mortality than the control area. As the third year of treatment begins, it is anticipated that the true effects of the predator management activities will become evident. Should no benefits to mule deer production and recruitment be evident after the third complete year of this treatment, further assessment and evaluation of the project’s merit will occur.

**Recommendation for FY2008:** Continue with Project 17. (Five-year Project).

**Proposed Budget for FY 2008:** WS - \$105,438; NDOW- \$3,500

## Project 18: Washoe County Deer

**Project Inception:** FY 2005

**Project Conclusion:** FY 2009 (5 year project)

**Project Area:** Treatment Area: Granite Range, Washoe County.

Control Area: Balance of northern Washoe County.

**Target Predator:** Coyote, Mountain Lion

**Predator Control Action:** WS to remove coyotes and lions using all practical methodology.

**Control Period:** Year-round.

**Other Action:** NDOW will capture 30 mule deer in the area and fit them with radio transmitters. Generally, distribution of the capture complement will be split between opposing slopes of the Granite Range.

**Desired Result:** Mule deer numbers should increase as fawn survival improves through the removal or diminution of coyote predation. The project can be considered a success if predator removal results in improved recruitment in the Unit 014 deer herd.

**Evaluation Period:** Post-season deer aerial surveys within the project area shall occur each year of the project. Composition of the findings shall reveal fawn survival from birth to approximately five months old. NDOW will also annually review climatic and precipitation data compiled by other agencies in an attempt to differentiate control activity effects from natural ecological response. Population estimates and fawn production for this herd will be compared to those for other populations within the control areas.

**FY 2007 Summary of Other Actions:** 24 mule deer were captured and collared in December 2004. FY2007 monitoring was as follows:

- A ground monitoring effort occurred on July 1, 2005 (1<sup>st</sup> day of FY2007) and was closely followed by an aerial follow up on July 8<sup>th</sup>. Aerial surveys found all instrumented animals alive.
- During the 2005 hunting season, one of the marked bucks was legally harvested by a Unit 014 tagholder. Findings thus far indicate that deer movements within the Granite Range are not very extensive.
- On June 21, 2007 NDOW personnel conducted another telemetry monitoring flight using the NDOW fixed wing Cessna. Of the original 24 installed transmitters a total of nine frequencies remained active and two of these were pulsing in the mortality mode. The latter instruments were located in remote areas and several attempts were made in the early summer to locate them from the ground. The newly acquired UTM locations will help to direct biologists into the remote areas where the transmitters are located. The other seven transmitters were functioning in the live mode. The instrumented deer have

been monitored on a regular basis over an 18-month period. The battery life on the ear tag transmitters is generally 15 to 16 months.

**FY2007 Expenditures:** WS-Nevada had proposed a budget authorization in the amount of \$33,859 to conduct coyote and mountain lion removal within the treatment area during FY2007. Expenditures amounted to \$31,949 for the fiscal year. NDOW had anticipated expending monies toward this project during the report period for the monitoring of the collared deer and intend to keep the monitoring up even though most of the collars are now not functioning. Several aerial telemetry flights and a number of ground monitoring efforts ensued last year.

**FY2007 Summary of Control Activities:** A total of 216 coyotes have been removed during FY 2007 and 611 for the project to date. The number of lions removed from unit 014 increased over the past year to 5 and now totals 9 since the project began in 2005. Several lions have also been removed from unit 015 that is believed to be part of the home range for lions that move into and out of unit 014. Coyote age is determined through collection/analysis of canine teeth. FY 2007 tooth analysis data will be available sometime after August 2007. FY 2007 teeth will be submitted for analysis in July 2007. FY 2006 teeth have yet to be analyzed so results are pending.

**FY2007 Summary of Measured Outcomes:**

<b>Table 1. Observed Fawn/Adult Ratios for Unit 014 and Adjacent Unit Groups</b>							
<b>Survey Type:</b>	<b>Unit Group:</b>	<b>Averages:</b>			<b>2004</b>	<b>2005</b>	<b>2006</b>
		1989-1994	1995-2004	2000-2004			
Post-season	014	30	45	37	38	52	50
	Washoe	31	39	33	56	47	46
	033	25	48	50	56	57	41
Spring*	014	18	36	32	44	65	51
	Washoe	19	31	30	48	60	44
	033	17	37	33	44	58	52

**Conclusions:**

Observed post-season fawn ratios dropped only slightly this year when compared with the 2005 ratio. The spring fawn ratios observed in unit 014 and throughout Washoe County showed little change from the post-season ratios collected the previous fall. This would indicate that mule deer experienced high survival through the winter of 2006-07. The mild conditions this past winter made it much easier for mule deer to locate sufficient food and cover. The post-season fawn ratio in 2005 and 2006 were above the average fawn ratio between 1985 and 1994 and also higher than the average observed between 1995 and 2003. However, fawn ratios can increase dramatically based upon many factors including the amount of precipitation received at different times of the year or the severity of the winter. A good example of this is the post-season ratio observed in 1999, where 99 fawns per 100 does, was observed in the fall. The following year the observed post-season fawn ratio dropped to 59 fawns per 100 does. Overall, mule deer

recruitment and survival over the past few years has been very high for unit 014. Other hunt units in Washoe County have also experienced high mule deer survival. This is believed to be mainly due to the very mild winters we have experienced the past two years. Monitoring of the mule deer populations in Washoe County will continue through the end of this project in 2009. It will be interesting to see if any differences in the recruitment rates are evident over the next several years.

**Recommendation for FY2008:** Continue with Project 14. (Five-year Project)

**Proposed Budget for FY 2008:** WS - \$95,525; NDOW- \$10,000.....

## **Project 19: Winters Creek/Marble Canyon Emergency Wildfire Project**

**Project Inception:** 2007

**Project Conclusion:** *Single year action*

**Project Area:** Elko County – Management Area 6. Areas consumed by wildfires occurring during June – September 2007.

**Target Predator:** Coyotes and ravens concentrating in and around unburned habitat within and in vicinity of the Winters, Susie, Basco Flat, Marble Canyon and other summer 2007 wildfires.

**Predator Control Action:** Coyote: aerial gunning. Raven: placement of DRC-1339 injected chicken eggs.

**Control Period:** Coyote: throughout year (August 2006 – June 2007). Raven: prior to sage grouse nesting cycle through end of brood rearing (spring 2007).

**Desired Results:** The project was designed to decrease both primary and secondary predator impacts on mule deer, pronghorn, sage grouse and numerous other prey species.

**Summary of Control Activities:** Wildlife Services aerial hunted a total of 101.3 hours, removing 494 coyotes. A map was produced to illuminate the clusters of predators repeatedly removed from specific areas. This suggested a concentration of prey as well as cover and water. Approximately 200 ravens were removed during two DRC-1339 projects. Ravens were removed in close association to two known leks in the Willow Creek Reservoir and St. John areas. The timing of the raven removal was associated with the nesting and brood rearing sage grouse.

### **Conclusion:**

#### **Raven Control Project:**

There is no way at this time to evaluate the effects of killing ravens associated with two leks in the Tuscarora PMU. Brood surveys will be conducted in the areas of the raven control projects. Wings will also continue to be collected in the area to assess production. These activities may shed some light on the effectiveness of the raven control projects.

#### **Coyote Control Project:**

There are few data available that help assess the effectiveness of coyote control on the success of big game species. The fire occurred in July and August and much of the predator control activity occurred even later, which time antelope fawns were likely less susceptible to coyote predation compared to late spring and early summer.

Extensive lek surveys conducted in the Tuscarora PMU during the spring of 2007 showed an alarming decrease in the sage grouse population. Overall the population decreased by more than 50%. Within trend grounds located in the vicinity of the Winters Fire, the sage grouse numbers decreased by 54%.

Significant coyote control was accomplished in the area of the Winters Fire. Based on the large decreases of sage grouse in the area, it appears that coyote predation of sage grouse may not have been the primary problem that faced these birds. More than 75% of the sage grouse habitat in

this area burned in the past two years. It is likely that 75% of the sage grouse population in the area will be lost over the long-term or until the areas recover sufficiently in order to provide nesting, hiding and thermal cover for these birds.

**Budget Review:**

<b>Table 1. Budget Summary for Project 19.</b>		
<b>Agency</b>	<b>Item</b>	<b>Amount</b>
<b>Wildlife Services</b>	Aerial gunning (@ \$150/hour)	\$13,328
	Egg placement	
<b>NDOW</b>	Population monitoring (covered through other funding)	- 0 -
<b>Total Approved Budget:</b>		<b>\$15,000</b>

## **PROJECT APPROVED FOR FY 2008**

### **Draft Project Proposal: Virginia Mountains - Lion Control Project Protected Species: California Bighorn, as well as mule deer and pronghorn Washoe County, Unit 022**

#### **Project Description:**

Wildlife Services will control and reduce mountain lion numbers in the Virginia Mountains of unit 022 in Washoe County. The project's primary goal is to provide protection for the existing bighorn sheep population and to help ensure that the planned augmentation of approximately 25 bighorn sheep on the north end of the Range scheduled for late 2007 or early 2008 is successful.

#### **Mountain Lion Control:**

The unit 022 bighorn population has failed to expand or increase in number when compared with other California bighorn sheep herds in Northern Nevada. NDOW believes that mountain lions living in the area may be keeping numbers of bighorn below the level needed for a self-sustaining population. Control work would be conducted year-round and take place throughout the Virginia Mountains of unit 022 in Washoe County. Lion removal is proposed to begin sometime in late 2007 or early 2008 (depending on the time it takes Wildlife Services to put the control project together) prior to or immediately following the release of bighorn. The control work is proposed to last for approximately three years to ensure that the newly released sheep have been given a greater chance of becoming firmly established. Other big game species may also benefit from the control work due to the fact that the area inhabited by bighorn is also an important winter range for both mule deer and pronghorn.

#### **Reasons for Conducting Lion Control:**

A high number of bighorn lion kills have been observed and reported from this area. The collared animals from the previous two bighorn sheep releases indicated a higher than normal mortality rate that was attributed to mountain lion predation. It is hoped that by providing protection to the existing population of animals and the newly released bighorn, that production and survival of young and adult animals will increase and allow the herd to become a self-sustaining population.

#### **Services Provided by Wildlife Services:**

#### **Mountain Lion Control:**

Wildlife Services (WS) will design and implement the lion control project. W.S. will provide a lion hunter for the duration of this project. Methods used to remove lions will be determined by Wildlife Services. W.S. will continue to bring any lions removed during the course of this project

to an NDOW office for sealing. W.S. will provide NDOW with a quarterly report of the number and dates when the lions were removed and the UTM location where the lions were taken. Any observations of bighorn and their locations will be noted and reported to NDOW. W.S will provide NDOW with an annual report summarizing the control work for the year.

**Timing of Service:**

Annual Work Period: Year-round  
Project Length: Late 2007 through the end of 2010

**Geographic Area of Project:**

The Virginia Mountains, Washoe Co, Nevada, (Unit 022). Wildlife Services may expand the boundary to take lions that are found to be moving into and out of surrounding hunt units.

**Project Analysis:**

Production and recruitment levels (lambs/100 ewes) of the unit 022 bighorn population will be monitored by NDOW. The predator control project will also include the costs of monitoring the sheep population during the course of the project. Annual helicopter bighorn composition surveys will be conducted to monitor the population. The number of lambs, ewes and rams observed during the surveys will be noted and composition ratios formulated to determine the trend of the bighorn population. Recruitment ratios will be used to monitor how the population is responding. Any observations by NDOW of mountain lions or bighorn lion mortalities will be forwarded to Wildlife Services.

**Wildlife Services Budget Summary:**

	Fiscal Year 2008	Fiscal Year2009	Fiscal Year 2010
Requested	\$123/day x 30 \$3,690		
Expended			

**Nevada Department of Wildlife Budget Summary:**

	Fiscal Year 2008	Fiscal Year2009	Fiscal Year 2010
Requested	\$4,000	\$4,000	\$4,000
Expended			

Details of above budgets will be added at a later date.

\*\*NDOW bighorn sheep survey estimates = \$12,000.00 total - \$4000.00 per year budgeted at \$1000.00 per hour and 4 hours per day/survey/year (for a total of 3 years) for El Aero Services out of Carson City to conduct the flights. This estimate includes projected per diem costs, helicopter hourly charges and charges for potential fuel truck use.

### FY2008 Project Budget Detail

<b>Project 6a: Protection of Desert Bighorn Sheep: Lincoln County</b>					
<b>WILDLIFE SERVICES</b>					
BUDGET ITEM	FY04	FY05	FY06	FY07	FY08
	Actual	Actual	Actual	Actual	Projected
GSA Vehicle (3 months)	\$1,599	\$1,87	\$2,435	\$3,288	\$4,500
Camp Trailer (\$100/ month)	\$0	\$0	\$1,007	\$0	\$0
Horse and Dog Hire (3 months)	\$2,972	\$1,860	\$3,410	\$3,100	\$3,100
Equipment and Snares	\$0	\$2,180	\$0	\$280	\$250
Camp Rate (3 months)	\$0	\$1,560	\$0	\$1,169	\$2,340
Administration	\$915	\$1,517	\$1,370	\$1,265	\$1,645
<b>TOTAL</b>	<b>\$5,486</b>	<b>\$9,104</b>	<b>\$8,222</b>	<b>\$9,104</b>	<b>\$11,836</b>

<b>Project 14: Wilson Creek - White Rock, Coyote Control to Enhance Mule Deer Fawn Production</b>					
<b>WILDLIFE SERVICES</b>					
BUDGET ITEM	FY04	FY05	FY06	FY07	FY08
	Actual	Actual	Actual	Actual	Projected
Salary/Benefits					\$35,656
Aerial Hunting	\$8,145	\$9,675	\$7,590	\$8,815	\$9,000
Hire/camp/veh					\$22,836
Supplies	\$0	\$480		\$270	\$200
Administration	\$1,629	\$2,031	\$1,518	\$1,467	\$11,565
<b>TOTAL</b>	<b>\$9,774</b>	<b>\$12,186</b>	<b>\$9,108</b>	<b>\$10,552</b>	<b>79,257</b>
<b>NEVADA DEPARTMENT OF WILDLIFE</b>					
BUDGET ITEM	FY04	FY05	FY06	FY07	FY08
	Actual	Actual	Actual	Actual	Projected
Coyote ageing	\$214	\$500	\$0	\$0	\$763
<b>PROJECT TOTAL</b>	<b>\$214</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$80,019</b>

<b>Project 15: Horse and Cattle Camp Loop, Schell Creek Range. Coyote Control to Enhance Mule Deer Fawn Production</b>					
<b>WILDLIFE SERVICES</b>					
<b>BUDGET ITEM</b>	<b>FY04</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>
	Actual	Actual	Actual	Actual	<i>Projected</i>
Salary/Benefits					\$13,885
Aerial Hunting	\$5,235	\$5,685	\$4,875	\$2,325	\$6,000
Hire/camp/veh					\$5,250
Supplies	\$0			\$	\$100
Administration	\$1,047	\$1,233	\$975	\$1,728	\$5,158
<b>TOTAL</b>	<b>\$6,282</b>	<b>\$7,398</b>	<b>\$5,850</b>	<b>\$8,628</b>	<b>\$30,393</b>
<b>NEVADA DEPARTMENT OF WILDLIFE</b>					
<b>BUDGET ITEM</b>	<b>FY04</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>
	Actual	Actual	Actual	Actual	<i>Projected</i>
Coyote ageing	\$213	\$0	\$0	\$0	\$762
<b>PROJECT TOTALS</b>	<b>\$6,495</b>	<b>\$7,398</b>	<b>\$5,850</b>	<b>\$8,628</b>	<b>\$31,155</b>

<b>Project 17: Elko County Deer and Elk Project</b>					
<b>WILDLIFE SERVICES</b>					
<b>BUDGET ITEM</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	
	Actual	Actual	Actual	<i>Projected</i>	
Salary/Benefits	\$13,712	\$21,427	\$33,316	\$50,959	
Hire/camp/veh	\$4,497	\$5,171	\$8,067	\$23,119	
Aerial Hunting	\$13,860	\$14,835	\$13,935	\$16,500	
Dog/Horse Hire	\$4,762	\$1,150	\$1,680	\$0	
Supplies	\$605	\$884	\$980	\$200	
Administration	\$7,487	\$7,519	\$9,891	\$14,660	
<b>TOTAL</b>	<b>\$44,923</b>	<b>\$50,986</b>	<b>\$71,138</b>	<b>\$105,438</b>	
<b>NEVADA DEPARTMENT OF WILDLIFE</b>					
<b>BUDGET ITEM</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	
	Actual	Actual	Actual	<i>Projected</i>	
Survey Flights	\$0	\$0	\$0	\$3,500	
<b>PROJECT TOTAL</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$108,937</b>	

<b>Project 18: Washoe County Deer Project</b>				
<b>WILDLIFE SERVICES</b>				
<b>BUDGET ITEM</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>
	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Projected</b>
Salary/Benefits	\$6,948	\$12,465	\$16,896	\$50,335
APHIS Vehicle	\$1,798	\$2,813	\$3,801	\$13,925
Camp & ATV Hire	\$2,765	\$1,506	\$1,007	\$8,782
Aerial Hunting	\$5,501	\$4,755	\$5,715	\$9,000
Supplies	\$290	\$99	\$85	\$200
Administration	\$3,209	\$4,328	\$4,442	\$13,282
<b>TOTAL</b>	<b>\$20,511</b>	<b>\$25,966</b>	<b>\$31,946</b>	<b>\$95,525</b>
<b>NEVADA DEPARTMENT OF WILDLIFE</b>				
<b>BUDGET ITEM</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>
	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Projected</b>
Deer Capture and handling (30 animals @ \$600/animal) and associated costs.	\$16,667	Done	\$0	\$0
Radio Tags (30 ear-tags @ \$225.00/ collar)	\$4,880	Done	\$0	\$0
Monitoring of animals (airplane, pilot, observer )	\$11,793	\$9,000	\$0	\$0
Survey	0	\$10,000	\$0	\$10,000
Coyote ageing	0	0	\$0	\$0
<b>PROJECT TOTAL</b>	<b>\$33,851</b>	<b>\$19,000</b>	<b>\$0</b>	<b>\$105,525</b>

<b>Project 19: Area 6 Wildfire Area Emergency Coyote &amp; Raven Removal</b>	
<b>WILDLIFE SERVICES</b>	
<b>BUDGET ITEM</b>	<b>FY 2008</b>
FY 2008 Approved	\$15,000
FY 2007 Spent	\$13,328
<b>TOTAL for FY 2008</b>	<b>\$15,000</b>