

# NEVADA

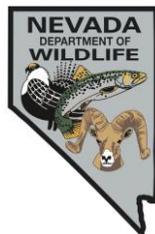
# PREDATION MANAGEMENT PLAN

## FY 2009



PHOTO BY KEVIN C. LANSFORD

*PREPARED BY: KEVIN C. LANSFORD*  
*AUGUST 2009*



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# **Nevada Predation Management Plan**

## **Fiscal Year 2009**

### **July 1, 2008 - June 30, 2009**

#### **Summary**

The Nevada Board of Wildlife Commissioners (Commission), aided by the Wildlife Damage Committee, may tentatively approve two projects for 2009 initiated in 2008 as emergency projects. If continued that would make eight ongoing projects overall. Fiscal year 2010 could prove to be a year that multiple new projects are proposed to the Commission for consideration. Project 14, 15 and 17 are all slated for potential conclusion in FY 2009.

Project 6A was initiated within the FY2002 Plan and was recommended to continue into FY2009. Projects 14 & 15 began in FY2004 and were recommended to continue into FY2009. Both are five-year projects with conclusion dates in FY2008, but were extended through 2009. Also approved were projects 17 & 18, which were initially accepted in the FY2005 Plan. These five year projects will conclude in FY2009 and are again recommended for funding in FY 2009. Project 19, the Winters Creek/Marble Canyon emergency fire project, was initiated to protect multiple species affected by the 2006 and 2007 fires in area 6 and 7 of Elko County.

Project 19 management activities includes 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 Areas 6 and 7.

Project 20, The Virgin Mountains Bighorn Sheep Project was initiated in 2008. The project was 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 by lions. In addition, a planned augmentation was to occur in 2008.

In FY 2008, at the request of area biologists, raven removal projects for the protection of sage grouse and turkeys was initiated on multiple leks in Lincoln and Elko Counties and for turkeys in Clark County. This was in response to one of the poorest chick production years on record for sage grouse and several non-production years for turkeys in the Moapa Valley at the Overton Wildlife Management Area. These are tentatively titled as Project 21a and 21b.

The 2009 PMP provides a brief synopsis of the FY 2008 predator management projects. An history of the Projects through 2006 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 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 [www.ndow.org](http://www.ndow.org).

## ***FY 2009 Project Status – Projects Funded for Continuation***

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

**Project Inception:** 2002

**Project Conclusion:** To be 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 2009, 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, aerial hunting and snares, to remove offending animals.

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

**Beneficiary Species:** Desert Bighorn Sheep and secondarily deer.

**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 with emphasis in the winter months where predation has been identified as concentrated.

**FY2008 Expenditures:** WS-Nevada had proposed a budget authorization in the amount of \$15,000 to conduct mountain lion removal within the Delamars during FY2009. Included in this increase is the reimbursement for additional coyote and bobcat work that includes some potential aerial hunting time.

**FY2008 Summary of Control Activities:** In FY 2008 53 bighorn sheep were augmented into the Delamar Mountains. Within a month one was predated by a bobcat. Wildlife Services moved into the area and set traps. Severe weather impeded trapping efforts. Ultimately two adult bobcats were removed from the immediate area of the predated sheep. No new predation was reported after those two bobcats were removed.

Additionally, one adult female lion weighing 90 pounds and aged at 5-6 years old was removed from within the work area. Several days later, the area biologist confirmed the predation of two collared bighorn sheep to lion predation. Wildlife Services lion specialist trailed the offending lion for weeks, losing the lion in a late season storm. Fresh lion sign was not discovered in subsequent investigations. To date no new lion predation has occurred. Overall, four lions have been removed from the project since the inception.

**FY2008 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 in the past, excluding the 53 in 2008, 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>
2001	16	17	5	38
2002	3	15	3	21
2003	7	12	2	21
2004	5	15	5	25
2005	5	19	3	27
2006	5	7	1	13
2007	7	12	5	24

**Conclusion:**

A total of 53 sheep were released in December 2007 in the upper portion of Bomber Canyon in the Delamar Range. These consisted of 3 rams, 43 ewes, and 7 lambs. Nineteen ewes were fitted with radio or satellite collars. To date five of these collared animals have perished. One animal died giving birth, the second was concluded to have been a bobcat kill, and three were either killed or suspected of being killed by a mountain lion.

Four lions and two bobcats 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 lion removed in 2006 was also linked to two deaths of bighorns in the area. It was also surmised that bobcat predation has had a potentially larger impact than anyone had originally thought. This was founded on the fact that at least two previous kills had been identified as predated by bobcats. Adding bobcats to the list of target species was based on the area biologist's historical knowledge of predation events and a hypothesis that bobcats were a larger problem than previously known. Unfortunately, he was proven correct.

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 FY2009:** Continue with Project 6A.

**Proposed Budget for FY 2009:** WS - \$15,000; NDOW- \$0

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

**Project Inception:** FY 2004

**Project Conclusion:** FY 2009 (5 year project extended to 6 years)

**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, winter ranges and other habitats 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 reduction of predator impacts.

**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.

**FY2008 Expenditures:** WS-Nevada had proposed a budget in the amount of \$85,501 to conduct coyote removal within the treatment area during FY2009. Expenditures amounted to \$79,257 for the fiscal year. NDOW did not record any expenditure for the report period.

**FY2008 Summary of Control Activities:** WS-Nevada reported the removal of 82 coyotes from the ground and 119 by aerial hunting during the report period. To date 840 coyotes have been removed. Coyote age is determined through collection/analysis of canine teeth.

**Tooth Analysis Update:** FY 2007 tooth analysis data will be available sometime after August 2008. FY 2008 teeth will be submitted for analysis in August/July 2008. Included in this report are maps indicating coyote take and associated ages from the tooth analysis. Unfortunately, the quality of samples and the technique for extraction have not produced a high percent of teeth being aged. The methods for jaw and tooth collection have been corrected.

As a complete as possible analysis of Project 14 and 15 will be conducted including an assessment of sex and age structure of the coyote population. If any of the analyses indices show improved fawn ratios, it will be important to understand if the sex and age structures of the coyote population showed an ability to change enough through predation management to alter the predation rates of coyotes on fawns.

**FY2008 Summary of Measured Outcomes:**

<b>Table 1. Observed Fawn/Doe Ratios for Project 14 Treatment Area</b>									
<b>Survey</b>	<b>Unit Group:</b>	<b>1985-1994</b>	<b>1995-2004</b>	<b>1999-2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
<b>Post-season</b>	231	.425	.396	.376	.433	.667	.439	.515	<b>N/A</b>
<b>Spring*</b>	231	.371	.375	.385	.429	.343	.619	.413	<b>.349*</b>

\*The spring survey was an abbreviated survey and was accomplished from the ground

**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. Observed fawns ratios were above average in the fall survey but fell to below average in the spring survey.

**Recommendation for FY2009:** An in depth assessment is required to assess the effectiveness of the project. Extend the project through FY 2009.

**Proposed Budget for FY 2009:** WS - \$85,501; Tooth Analyses \$850.

## **Project 15: Horse and Cattle Camp Loop, Schell Creek Range**

**Project Inception:** FY 2004

**Project Conclusion:** FY 2009 (5 year project extended to 6years)

**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 from 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 reduction of predator impacts.

**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.

**FY2009 Expenditures:** WS-Nevada had proposed a budget authorization in the amount of \$32,469 to conduct coyote removal within the treatment area during FY2009. NDOW did not record any expenditure for the report period.

**FY2009 Summary of Control Activities:** WS-Nevada reported the removal of 56 coyotes from the ground and 68 coyotes aerial hunting for a total of 124 during the report period, which was a tremendous year for coyote removal. Total coyotes removed during the years amounts to a total of 464 animals. Coyote teeth have not yet been submitted for age analysis for FY 2008. Also, for the second time on this project, a mountain lion was captured in a snare. The male lion was estimated at five years of age.

**Tooth Analysis Update:** FY 2007 tooth analysis data will be available sometime after August 2008. FY 2008 teeth will be submitted for analysis in August/July 2008. Included in this report are maps indicating coyote take and associated ages from the tooth analysis. Unfortunately, the quality of samples and the technique for extraction have not produced a high percent of teeth being aged. The methods for jaw and tooth collection have been corrected.

As a complete as possible analysis of Project 14 and 15 will be conducted including an assessment of sex and age structure of the coyote population. If any of the analyses

indices show improved fawn ratios, it will be important to understand if the sex and age structures of the coyote population showed an ability to change enough through predation management to alter the predation rates of coyotes on fawns.

**FY2009 Summary of Measured Outcomes:**

<b>Table 1. Observed Fawn/Doe Ratios for Project 14 Treatment Area</b>									
<b>Survey</b>	<b>Unit Group:</b>	<b>1985-1994</b>	<b>1995-2004</b>	<b>1999-2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Post-season	221-223	.387	.374	.388	.357	.426	.443	.446	<b>N/A</b>
Spring*	221-223	.329	.345	.375	.359	.274	.544	.425	<b>.297*</b>

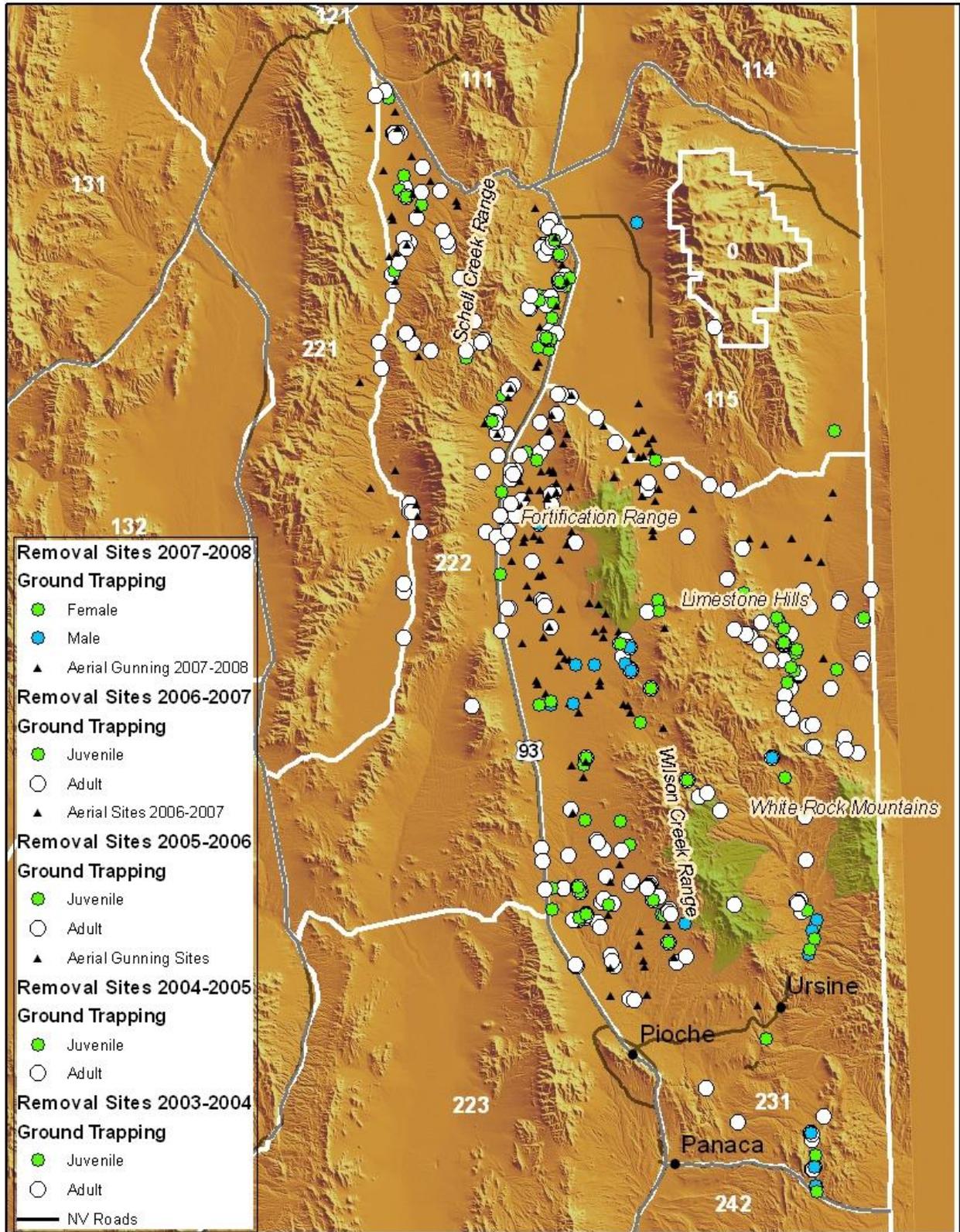
\*Spring survey was an abbreviated survey and accomplished from the ground.

**Conclusion:**

The observed fawn ratio during fall surveys was above average. The spring survey was done from the ground and revealed fawn ratios fell well below average. 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 FY2009:** Continue with Project 15. (Five-year Project extended to 6 years). 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 2009:** WS - \$32,469; Tooth Analyses \$850.



## 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.

**FY2009 Expenditures:** WS-Nevada had proposed a budget authorization in the amount of \$113,601 to conduct coyote and mountain lion removal within the treatment area during FY2009. This project relies on considerable aerial hunting, which accounts for much of the expense.

**FY2009 Summary of Control Activities:** WS-Nevada reported the removal of 263 coyotes via aerial hunting and 312 from the ground during the report period. Total coyotes removed during the 4 year project totals 1,966 coyotes as well as 11 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 2007 with 13 fetuses in her uterus.

**FY2009 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	2007
Post-season	101, 105, 107	50	46	44	45	34	40	39
	102, 103, 104 & 108	50	46	43	40	29	39	38
Spring*	101, 105, 107	34	33	33	39	28	39	25
	102, 103, 104 & 108	34	36	35	40	30	31	22

\* 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:**

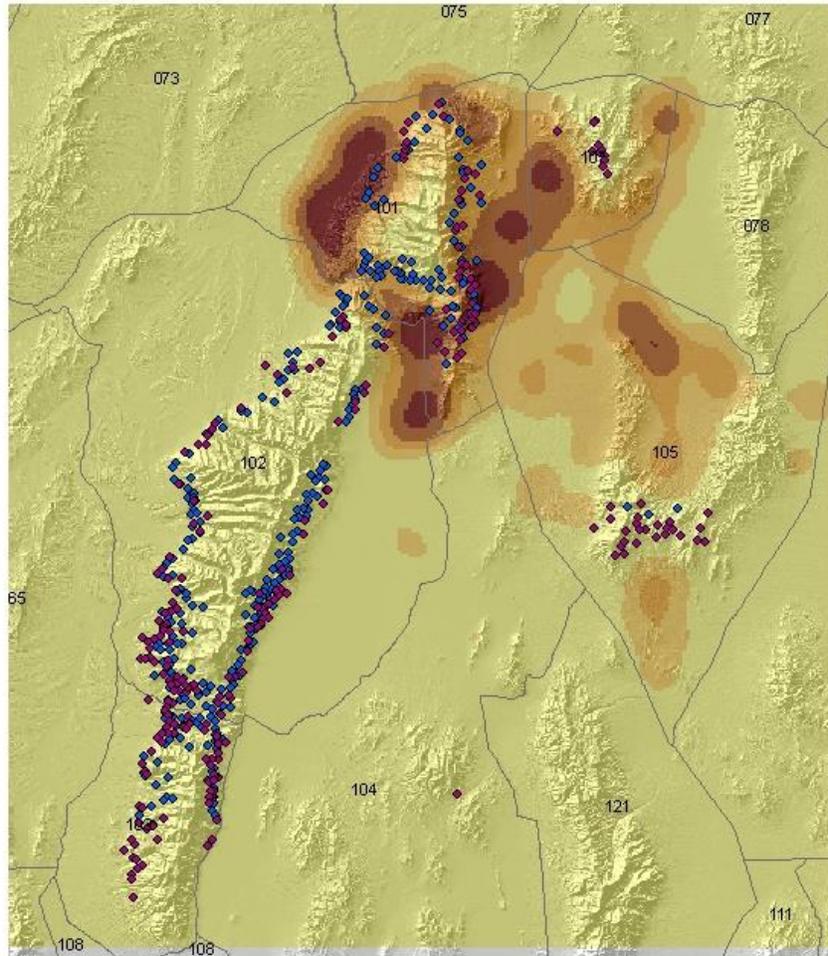
Predator control activities again resulted in the removal of many coyotes during FY2008. Total predator removal is impressive on face value, with Wildlife Services removing approximately 1965 animals in just three and a half years. Sport lion harvest has remained high in Area 10 with more lions removed 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 lower deer density (prey) is a factor.

Post-season mule deer fawn ratios, still low compared to long-term averages, remained stable in both the treatment area and the control area in 2007. Fawn ratios decreased by 1 fawn per 100 adults from last year in both the control area (39 to 38) and the treatment area (40 to 39). Following a very dry summer, severe winter conditions existed throughout the area. Both areas had significant over winter fawn mortality. The treatment area dropped 14 fawns per 100 does (39 to 25) and the control area dropped 9 fawns 100 does (31 to 22). Although both were very low, the treatment area had slightly higher fawn ratios (25) than the control area (22) in the spring. Despite this three fawn per 100 doe difference, data evaluation and analysis at the University of Nevada Reno has preliminarily concluded, “The population of mule deer in these hunt units does not appear to be predator limited. Other factors such as habitat, or forage quality and availability are probably more likely to be limiting these two populations“. As the fifth year of treatment begins, it is anticipated that if any effects of the predator management activities are to be observed, they should now become evident. Should no benefits to mule deer production and recruitment be evident after the fifth complete

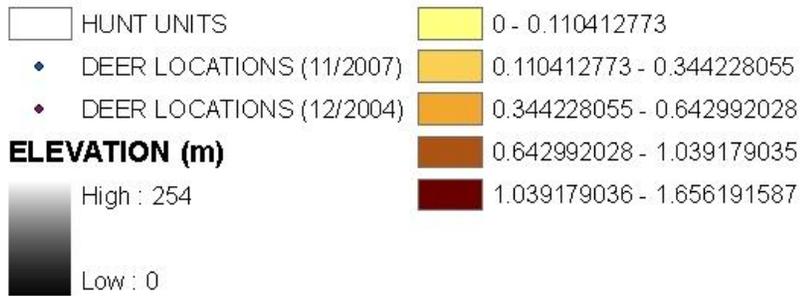
year of this treatment, further assessment and evaluation of the project's merit will occur.

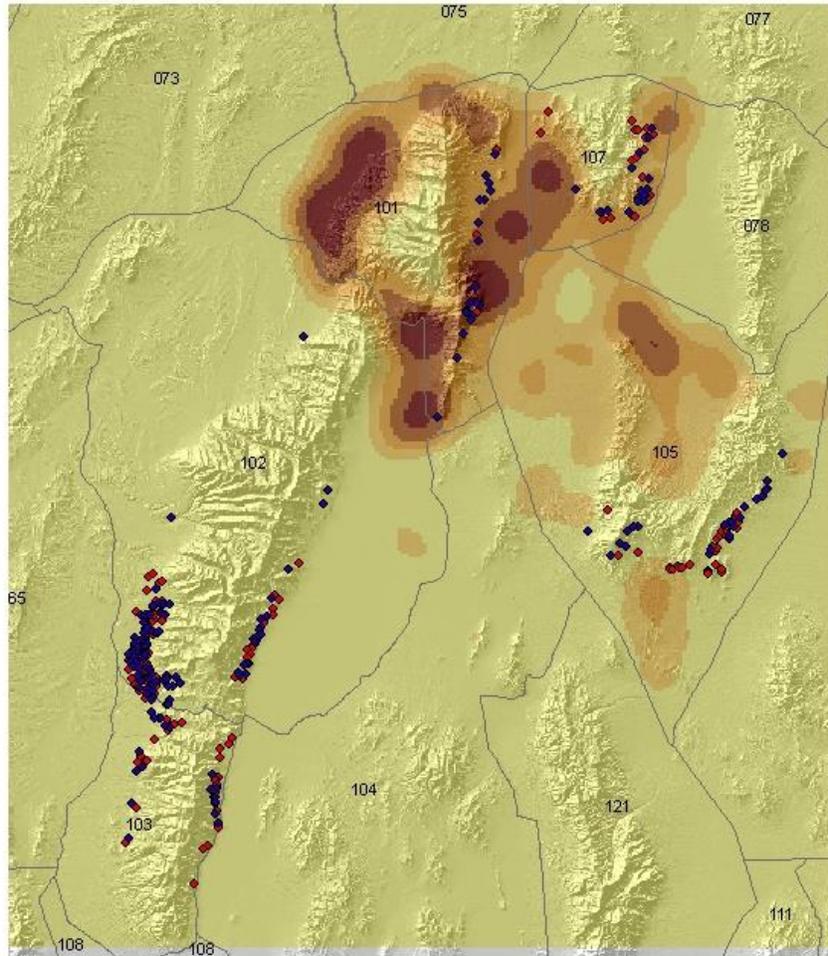
**Recommendation for FY2009:** Continue with Project 17. (Five-year Project).

**Proposed Budget for FY 2009:** WS - \$113,601; NDOW- \$3,500

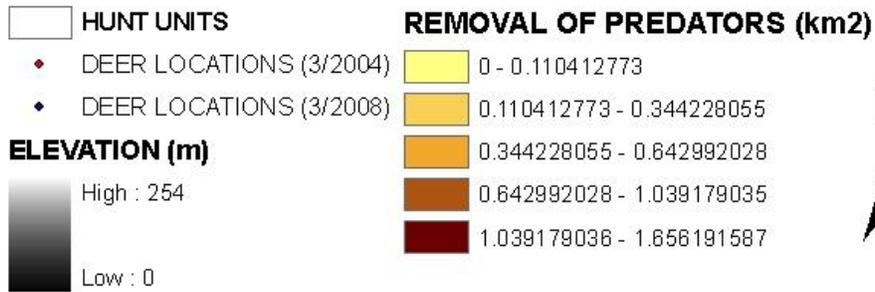


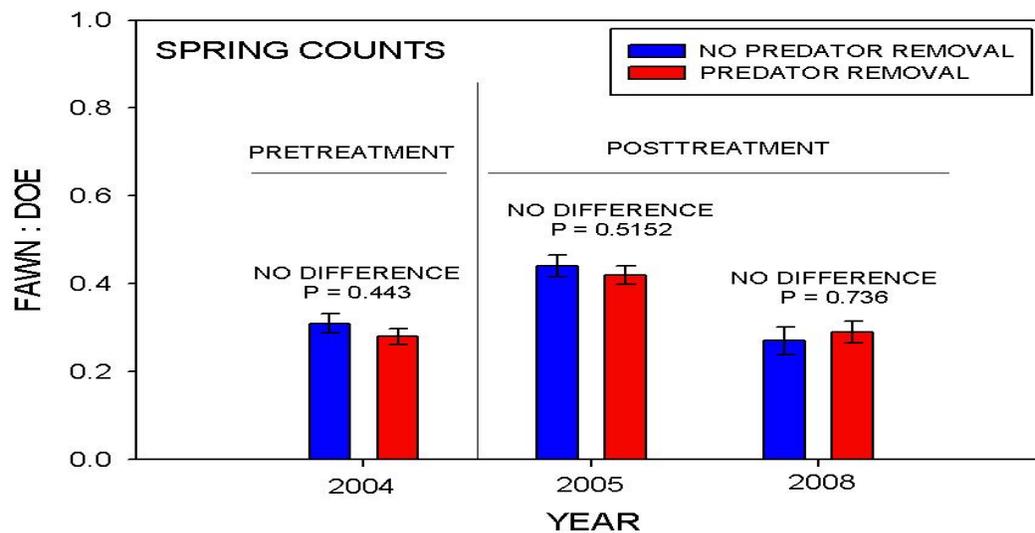
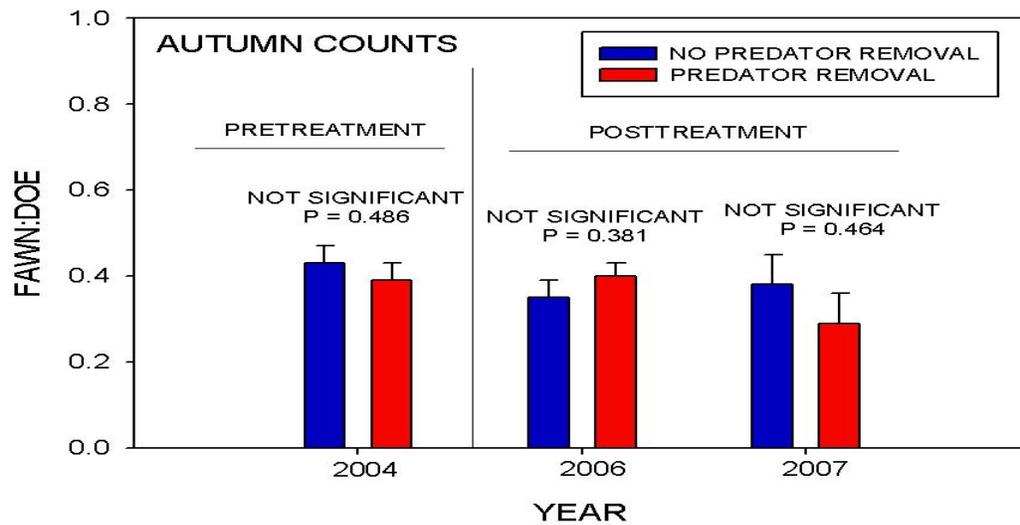
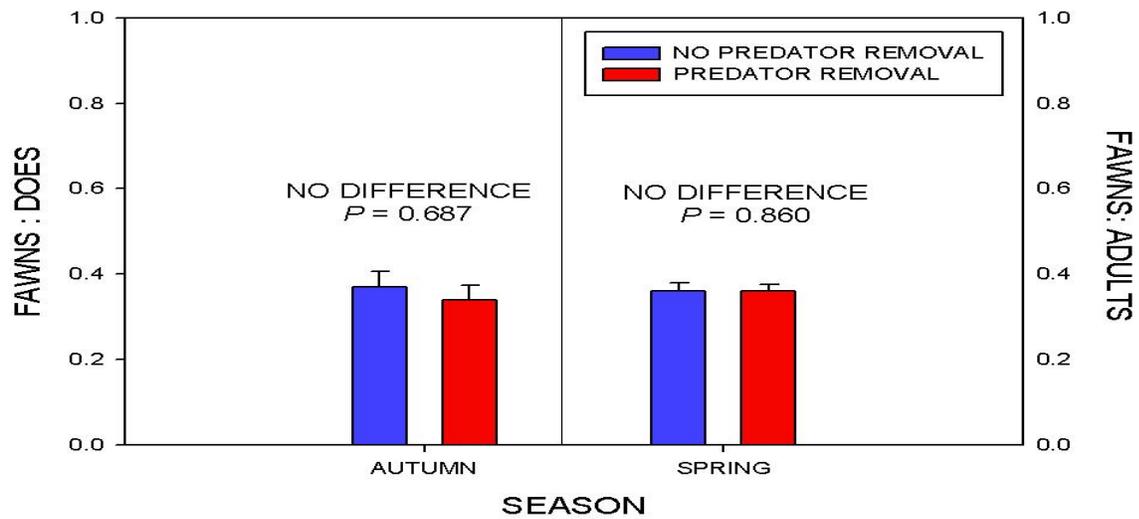
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## Project 18: Washoe County Deer

**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.

**Summary of Project Deer Actions:** 24 mule deer were captured and collared in December 2004. FY2005 monitoring was as follows:

- A ground monitoring effort occurred on July 1, 2005 (1<sup>st</sup> day of FY2009) 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 tag holder. Findings thus far indicate that deer movements within the Granite Range are not very extensive.
- On June 21, 2009 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 from the air in remote areas. 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.

**FY2009 Expenditures:** WS-Nevada had proposed a budget authorization in the amount of \$103,945 to conduct coyote and mountain lion removal within the treatment area during FY2009. 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.

**FY2009 Summary of Control Activities:** A total of 71 coyotes from the ground and 22 by aerial hunting have been removed during FY 2009. A total of 704 coyotes have been removed for the project to date. The number of lions removed from unit 014 again increased over the past year to 7 and now totals 16 since the project began in 2005. Six of the seven were removed using neck snares. 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.

**Tooth Analysis Update:** FY 2007 tooth analysis data will be available sometime after August 2008. FY 2008 teeth will be submitted for analysis in July/August 2008. Unfortunately, the quality of samples and the technique for extraction have not produced a high percent of teeth being aged. The methods for jaw and tooth collection have been corrected.

**FY2009 Summary of Measured Outcomes:**

TABLE 1: Fawn/Adult Ratios for Treatment (014) and Control Areas.							
Unit Group:	Post Season Averages (Fall)			Fall Surveys			
	1989-1994	1995-2004	2000-2004	2004-05	2005-06	2006-07	2007-08
14	30	45	37	38	52	50	44
Washoe	31	39	33	56	47	46	29
Sheldon	25	48	50	56	57	41	43
	Spring Averages			Spring Surveys			
14	18	36	32	44	65	51	32
Washoe	19	31	30	48	60	44	28*
Sheldon	17	37	33	44	58	52	26*

\*2007-08 spring data collected from the ground and resulted in small sample sizes\* Due to a maintenance issue with one of the NDOW helicopters, the 2007-08 spring data was collected from the ground and resulted in a reduced number of animals classified and smaller sample sizes. Some of the data may be inadequate to assess accurate recruitment rates.

**Conclusion:**

Northwestern Nevada suffered through almost two years of severe drought in 2006 and 2007. The drought significantly reduced the quality of mule deer habitats throughout much of Washoe and western Humboldt Counties. Water availability and the quality of mule deer forage worsened as the drought continued through the summer and fall of 2007. Hunt unit 011 in the extreme northwestern portion of the state was the only area that received above average precipitation and habitat conditions remained very good. All other hunt units in northwestern Nevada suffered from the extended drought. The poor habitat conditions are believed to be the main reason for the reduced mule deer production and recruitment rates observed in 2007-08.

Fawn ratios calculated from the 2007 mule deer post-season surveys ranged between 33 and 46 fawns per 100 adults this past fall. This is well down from what has been observed in recent years. In the spring, ratios ranged between 26 and 32 fawns per 100 adults. The recruitment rates observed this past spring are also lower than those observed over the past three-year period. Fawn ratios show fairly significant declines in almost all of the post-season and spring survey ratios when compared with the previous three years of data. However, this past year's production and recruitment rates do compare with many of the long-term averages between 1989 and 2004. Now that drought conditions have subsided, it will be interesting to see how mule deer respond to the improved habitat conditions in the coming year.

Unfortunately, this past year spring helicopter surveys had to be canceled in Washoe County due to the breakdown of one of the NDOW helicopters. Some of the data collected from the ground in the spring of 2008 should be looked at with caution as snow and muddy roads prevented vehicle access to many of the areas that mule deer inhabit in the spring. The ground surveys generally resulted in much lower numbers of animals being classified and in some hunt units the numbers may be too low to accurately determine annual recruitment.

The increase in the number of lions taken from the Granite Range may be due to the removal of older dominant male lions that do not allow younger transient lions into their territories. Many of the lions taken during the past few years were younger lions that were more than likely searching for areas to establish their own territories.

NDOW will continue to monitor mule deer populations in Washoe County and the Sheldon through the end of this project in 2009. It will be interesting to see if any fluctuations in mule deer recruitment rates are observed with the increased number of lions being removed from the project area. The numbers of lions in the Granite Range at the time of this writing is thought to be low.

**Recommendation for FY2009:** Continue with Project 18. (Five-year Project)

**Proposed Budget for FY 2009:** WS - \$103,945; NDOW- \$10,000

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

**Project Inception:** 2006

**Project Conclusion:** Not determined.

**Project Area:** Elko County – Management Areas 6 and Area 7.

**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 2006 and 2007 wildfires.

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

**Control Period:** Coyote: throughout year (August 2006 – June 2009). Raven: prior to sage grouse nesting cycle through end of brood rearing (spring 2009).

**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.

**FY2009 Expenditures:** WS-Nevada had proposed a budget authorization in the amount of \$17,475 to conduct coyote and raven removal within the treatment area during FY2009. This project relies on aerial hunting, which accounts for the largest portion of the budget.

**Summary of Control Activities:** Wildlife Services aerial hunted 111 from the area in FY 2008 and 605 coyotes for the project to date. 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. Ravens were removed in close association to two known leks in the Willow Creek Reservoir and St. John areas. Approximately 200 ravens were removed during two DRC-1339 projects in 2007. Those same areas were retreated in 2008 removing another 55 ravens from the two areas. The timing of the raven removal was associated with the lekking, nesting and brood rearing sage grouse.

**Conclusion:**

### **Raven Control Project:**

It would be extremely difficult without proper sampling methodologies in place prior to initiating removal of ravens to evaluate the effects associated with the 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:**

Significant coyote control has been accomplished in the burn areas. As is with the raven projects, assessing these projects success is nearly impossible. The intent was

to assist remaining populations' survival rate reducing recovery time. The desired result was to add an additional tool to the massive restoration projects ongoing in Elko County. No attempt at this time can be made to evaluate the effects.

**Recommendation for FY2009:** Continue with Project 19.

**Proposed Budget for FY 2009:** WS - \$17,475;

## **Project 20: Virginia Mountains BHS**

**Project Inception:** 2008

**Project Conclusion:** Not determined.

**Project Area:** Washoe County, Unit 022.

**Target Predator:** Mountain Lions

**Predator Control Action:** The USDA/APHIS Wildlife Services will remove lions using the tools deemed practical and effective including hounds and snares.

**Control Period:** As required.

**Desired Results:** 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.

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.

**FY2009 Expenditures:** A total budget request of \$5,000 for Wildlife Services to perform control work as needed and as available.

**Summary of Control Activities:** Wildlife Services Lion Specialist initiated control activities in January 2008. Almost immediately a female with 3 kittens was located and removed within the same range the sheep were occupying. It is well known and documented that female lions with kittens are the most prolific killers. Removing that specific situation was important. In February another female was removed within the sheep's range, again a female.

### **Conclusion:**

No lion predation has been confirmed on the augmented sheep to date. The removal of the five lions presumably helped that statistic out. The situation will be watched closely in FY 2009 and the collars closely monitored for any mortality signals that may be attributed to predation. The collars on the bighorn sheep, as with the Delamar Project, allow for a more surgical approach to predator identification and ultimate removal. The quick response to a mortality signal is critical to properly identifying the cause of death.

**Recommendation for FY2009:** Continue with Project 18. (Five-year Project)  
**Proposed Budget for FY 2009:** WS - \$5,000; NDOW- \$4,000

**Emergent Project: Elko and Lincoln County Sage Grouse (Project 21a)**

**Project Inception:** 2008

**Project Conclusion:** Not determined.

**Project Area:** Twenty leks in Elko and Lincoln Counties.

**Target Predator:** Ravens

**Predator Control Action:** The USDA/APHIS Wildlife Services will remove ravens using DRC-1339.

**Control Period:** March-May.

**Desired Results:** Nest success should increase from the suppression of ravens.

**FY2009 Expenditures:** Although \$20,000 was designated for emergency projects, that money was not expended on this project due to Wildlife Services aerial program having down time to due a pilot leaving. Those savings allowed for this project to be funded from the base budget. It was estimated that it cost Wildlife Services \$10,000 to treat these 20 locations, including re-treatments.

**Summary of Control Activities:**

**Little Spring Valley**

- 1) **Little Spring Valley 1 Lek**- First treated on 3/11/08, 75 ravens observed and 125 egg baits placed. 50 ravens estimated removed. Re-treated on 3/18/08, 30 ravens observed and 75 egg baits placed. 20 ravens estimated removed. Re-treated on 4/23/08, 30 ravens observed and 60 egg baits placed. 25 ravens estimated removed.
- 2) **Whittemore Lek**- First treated on 3/11/08, 30 ravens observed and 75 egg baits placed. 20 ravens estimated removed. Re-treated on 3/18/08, 25 ravens observed and 40 egg baits placed. 15 ravens estimated removed. Re-treated on 4/23/08, 10 ravens observed and 20 egg baits placed. Five ravens estimated removed.
- 3) **Fogliani Lek**- First treated on 3/11/08, 45 ravens observed and 60 egg baits placed. 30 ravens estimated removed. Re-treated on 3/18/08, 25 ravens observed and 35 egg baits placed. 15 ravens estimated removed. Re-treated on 4/23/08, 10 ravens observed and 20 egg baits placed. Five ravens estimated removed.

**South Lake Valley**

- 1) **Eight Mile Lek**- First treated on 3/13/08, 25 ravens observed and 35 egg baits placed. 15 ravens estimated removed. Re-treated on 4/1/08, 25 ravens observed and 50 egg baits placed. 15 ravens estimated removed.

- 2) **Benchland Lek**- First treated on 3/13/08, 35 ravens observed and 45 egg baits placed. 20 ravens estimated removed. Re-treated on 4/1/08, 35 ravens observed and 100 egg baits placed. 30 ravens estimated removed.

### **North Lake Valley**

- 1) **Tub Peak Hills1 Lek**- First treated on 3/13/08, 6 ravens observed and 11 egg baits placed. 4 ravens estimated removed. Re-treated on 3/14/08, 4 ravens observed and 10 egg baits placed. Two ravens estimated removed. Re-treated on 4/23/08, 20 ravens observed and 40 egg baits placed. 10 ravens estimated removed.
- 2) **Tub Peak Hills 2 Lek**- First treated on 3/13/08, 10 ravens observed and 20 egg baits placed. 5 ravens estimated removed. Re-treated on 3/14/08, 6 ravens observed and 10 egg baits placed. Four ravens estimated removed. Re-treated on 4/23/08, 20 ravens observed and 40 egg baits placed. 10 ravens estimated removed.
- 3) **Tub Peaks Hills 3 Lek**- First treated on 3/13/08, 4 ravens observed and 14 egg baits placed. Two ravens estimated removed. Re-treated on 3/14/08, 4 ravens observed and 10 egg baits placed. Two ravens estimated removed.

### **Hamlin Valley**

- 1) **North Hamlin Well Lek**- First treated on 3/13/08, 35 ravens observed and 40 egg baits placed. 20 ravens estimated removed. Re-treated on 3/14/08, 20 ravens observed and 32 egg baits placed. Ten ravens estimated removed.
- 2) **Rosencrans Knolls 1 Lek**- First treated on 3/13/08, 15 ravens observed and 25 egg baits placed. 8 ravens estimated removed. Re-treated on 3/14/08, 4 ravens observed and 8 egg baits placed. Two ravens estimated removed.
- 3) **Rosencrans Knolls 2 Lek**- First treated on 3/13/08, 10 ravens observed and 20 egg baits placed. 5 ravens estimated removed. Re-treated on 3/14/08, 10 ravens observed and 20 egg baits placed. Five ravens estimated removed.

### **Cave Valley**

- 1) **Gardner Ranch Lek**- First treated on 3/18/08, 25 ravens observed and 40 egg baits placed. 15 ravens estimated removed.
- 2) **Patterson Pass 1 Lek**- First treated on 3/18/08, 15 ravens observed and 30 egg baits placed. Ten ravens estimated removed.

### **Elko County:**

- 1) **Harris Lek Complex**- First treated on 3/20/08, 200 ravens observed and 240 egg baits placed. 100 ravens estimated removed. Re-treated on 3/25/08, 53 ravens observed and 60 egg baits placed. 35 ravens estimated removed. Re-treated on 4/17/08, 23 ravens observed and 60 egg baits placed. 15 ravens estimated removed.
- 2) **Barry's Lek Complex**- First treated on 3/25/08, 150 ravens observed and 180 egg baits placed. 75 ravens estimated removed. Re-treated on 4/3/08, 150

ravens observed and 240 egg baits placed. 100 ravens estimated removed. Re-treated on 5/19/08, 40 ravens observed and 60 egg baits placed. 30 ravens estimated removed. The Wildlife Services aircraft located a carcass pit associated with a cow/calf operation near this lek. These ravens were not observed during the first treatment adding to the number of ravens in the treatment area.

- 3) **West Basin Lek Complex**- First treated on 4/17/08, 75 ravens' observed and 226 egg baits placed. 60 ravens estimated removed.
- 4) **Willow Creek Lek**- Treated on 4/28/08, 10 ravens observed and 75 egg baits placed. 10 ravens estimated removed.
- 5) **St. Johns Lek**- Treated on 4/28/08, 45 ravens observed and 110 egg baits placed. 45 ravens estimated removed.
- 6) **Death Creek Lek**- Treated on 4/29/08- 14 ravens observed and 75 egg baits placed. 14 ravens estimated removed.

**Conclusion:**

A total of 2436 treated eggs were placed at 16 leks. An estimated 925 ravens were removed. Both Wildlife Services and NDOW's observations indicated a dramatic reduction in raven numbers in and around the treatment areas. Wildlife Services observations indicate that a 90% or higher reduction in localized raven numbers can be achieved.

Assessing direct impact on brood success is not possible, but a better evaluation of the efficiency can be made over time. It is recommended that these projects be repeated in FY 2009. The project can be funded through the Emergency Projects contingency fund.

**Recommendation for FY2009:** Continue with Project (21).

**Proposed Budget for FY 2009:** WS – [estimated \\$10,000](#)

**Emergent Project: Overton WMA Turkey (Project 21b)**

**Project Inception:** 2008

**Project Conclusion:** Not determined.

**Project Area:** Overton Wildlife Management Area

**Target Predator:** Ravens

**Predator Control Action:** The USDA/APHIS Wildlife Services will remove ravens using DRC-1339.

**Control Period:** March-June.

**Desired Results:** Nest success should increase from the suppression of ravens.

**FY2009 Expenditures:** Again this project cost was absorbed into the Wildlife Services budget due to savings from the approved aerial hunting budget. Expenditures were under \$2,000.

**Conclusion:** In the past raven control efforts on Overton and Kirch WMA's have been successful in producing clutches of waterfowl as well as turkeys. After several years of no turkey poult production it was hypothesized that ravens predation was the problem. This based on observations of ravens predating on other nesting birds nest in the WMA.

While no conclusion may be drawn, at the time of this report several broods of poults were reported on the WMA. The project can be funded through the Emergency Projects contingency fund.

**Recommendation for FY2009:** Continue with Project as needed.

**Proposed Budget for FY 2009:** WS – [estimated \\$2,000](#)

### FY2009 Project Budget Detail

<b>Project 6a: Protection of Desert Bighorn Sheep: Lincoln County</b>					
<b>WILDLIFE SERVICES</b>					
BUDGET ITEM	FY05	FY06	FY07	FY08	FY09
	Actual	Actual	Actual	Actual	Projected
GSA Vehicle (3 months)	\$1,87	\$2,435	\$3,288	\$4,500	\$5,000
Camp Trailer (\$100/ month)	\$0	\$1,007	\$0	\$0	
Horse and Dog Hire (3 months)	\$1,860	\$3,410	\$3,100	\$3,100	\$4,000
Equipment and Snares	\$2,180	\$0	\$280	\$250	\$1,000
Camp Rate (3 months)	\$1,560	\$0	\$1,169	\$2,340	\$2,500
Administration	\$1,517	\$1,370	\$1,265	\$1,645	\$2,500
<b>TOTAL</b>	<b>\$9,104</b>	<b>\$8,222</b>	<b>\$9,104</b>	<b>\$11,836</b>	<b>\$15,000</b>

<b>Project 14: Wilson Creek - White Rock, Coyote Control to Enhance Mule Deer Fawn Production</b>					
<b>WILDLIFE SERVICES</b>					
BUDGET ITEM	FY05	FY06	FY07	FY08	FY09
	Actual	Actual	Actual	Actual	Projected
Salary/Benefits				\$35,656	\$38,509
Aerial Hunting	\$9,675	\$7,590	\$8,815	\$9,000	\$9,625
Hire/camp/veh				\$22,836	\$24,662
Supplies	\$480		\$270	\$200	\$216
Administration	\$2,031	\$1,518	\$1,467	\$11,565	\$12,489
<b>TOTAL</b>	<b>\$12,186</b>	<b>\$9,108</b>	<b>\$10,552</b>	<b>\$79,257</b>	<b>\$85,501</b>
<b>NEVADA DEPARTMENT OF WILDLIFE</b>					
BUDGET ITEM	FY05	FY06	FY07	FY08	FY09
	Actual	Actual	Actual	Actual	Projected
Coyote ageing	\$600	\$600	\$750	\$850	\$850
<b>PROJECT TOTAL</b>	<b>\$600</b>	<b>\$600</b>	<b>\$750</b>	<b>\$850</b>	<b>\$86,351</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>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</b>
	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Projected</b>
Salary/Benefits				\$13,885	\$14,996
Aerial Hunting	\$5,685	\$4,875	\$2,325	\$6,000	\$6,125
Hire/camp/veh				\$5,250	\$5,670
Supplies			\$	\$100	\$108
Administration	\$1,233	\$975	\$1,728	\$5,158	\$5,570
<b>TOTAL</b>	<b>\$7,398</b>	<b>\$5,850</b>	<b>\$8,628</b>	<b>\$30,393</b>	<b>\$32,469</b>
<b>NEVADA DEPARTMENT OF WILDLIFE</b>					
<b>BUDGET ITEM</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</b>
	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Projected</b>
Coyote ageing	\$0	\$0	\$0	\$762	\$850
<b>PROJECT TOTALS</b>	<b>\$7,398</b>	<b>\$5,850</b>	<b>\$8,628</b>	<b>\$31,155</b>	<b>\$33,319</b>

<b>Project 17: Elko County Deer and Elk Project</b>					
<b>WILDLIFE SERVICES</b>					
<b>BUDGET ITEM</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</b>	
	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Projected</b>	
Salary/Benefits	\$21,427	\$33,316	\$50,959	\$55,036	
Hire/camp/veh	\$5,171	\$8,067	\$23,119	\$22,148	
Aerial Hunting	\$14,835	\$13,935	\$16,500	\$17,500	
Dog/Horse Hire	\$1,150	\$1,680	\$0	\$2,818	
Supplies	\$884	\$980	\$200	\$216	
Administration	\$7,519	\$9,891	\$14,660	\$15,883	
<b>TOTAL</b>	<b>\$50,986</b>	<b>\$71,138</b>	<b>\$105,438</b>	<b>\$113,601</b>	
<b>NEVADA DEPARTMENT OF WILDLIFE</b>					
<b>BUDGET ITEM</b>		<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</b>
		<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Projected</b>
Survey Flights		\$0	\$0	\$0	\$3,500
<b>PROJECT TOTAL</b>		<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$117,101</b>

<b>Project 18: Washoe County Deer Project</b>					
<b>WILDLIFE SERVICES</b>					
<b>BUDGET ITEM</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</b>	
	<b>Actual</b>	<b>Actual</b>	<b>Actual</b>	<b>Projected</b>	
Salary/Benefits	\$12,465	\$16,896	\$50,335	\$54,362	
APHIS Vehicle	\$2,813	\$3,801	\$13,925	\$15,039	
Camp & ATV Hire	\$1,506	\$1,007	\$8,782	\$9,484	
Aerial Hunting	\$4,755	\$5,715	\$9,000	\$10,500	
Supplies	\$99	\$85	\$200	\$216	
Administration	\$4,328	\$4,442	\$13,282	\$14,344	
<b>TOTAL</b>	<b>\$25,966</b>	<b>\$31,946</b>	<b>\$95,525</b>	<b>\$103,945</b>	
<b>NEVADA DEPARTMENT OF WILDLIFE</b>					
<b>BUDGET ITEM</b>	<b>FY05</b>	<b>FY06</b>	<b>FY07</b>	<b>FY08</b>	<b>FY09</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	\$0
Radio Tags (30 ear-tags @ \$225.00/collar)	\$4,880	Done	\$0	\$0	\$0
Monitoring of animals (airplane, pilot, observer)	\$11,793	\$9,000	\$0	\$0	\$0
Survey	\$0	\$10,000	\$10,000	\$10,000	\$10,000
Coyote ageing	\$0	\$0	\$0	\$0	\$0
<b>PROJECT TOTAL</b>	<b>\$33,851</b>	<b>\$19,000</b>	<b>\$10,000</b>	<b>\$10,000</b>	<b>\$113,945</b>

<b>Project 19: Area 6 Wildfire Area Emergency Coyote &amp; Raven Removal</b>	
<b>WILDLIFE SERVICES</b>	
<b>BUDGET ITEM</b>	<b>FY 2009</b>
FY 2008 Approved	\$15,000
FY 2009 Projected	\$17,475
<b>TOTAL for FY 2009</b>	<b>\$17,475</b>

<b>Project 20: Virginia Mountains BHS</b>	
<b>WILDLIFE SERVICES</b>	
<b>BUDGET ITEM</b>	<b>FY 2009</b>
FY 2008 Approved	\$4,000
FY 2009 Projected	\$5,000
<b>TOTAL for FY 2009</b>	<b>\$5,000</b>

<b>PREDATION MANAGEMENT PROGRAM <i>DRAFT</i> BUDGET FY 2009</b>						
<b>July 1, 2008 Beginning Balance (balance forward from FY2008):</b>					<b>\$616,213</b>	
Item	Unit	Days	Cost	Subtotals:	TOTALS:	
<b>Wildlife Services Budget:</b>						
<b>Project Expenditures</b>						
Project 6B - Delamar BHS			\$15,000			
Project 14 - Wilson Creek Deer			\$85,501			
Project 15 - Horse/Cattle Camp Deer			\$3,2469			
Project 17 - Elko County Deer/Elk			\$113,601			
Project 18 - Granite Range Deer			\$103,945			
Project 19 - Area 6 Burned Area Recovery			\$17,475			
Project 20 - Virginia Mtns BHS			\$5,000		<b>W.S.:</b>	<b>\$372,991</b>
<b>NDOW Budget:</b>						
<b>Salary</b>						
Game Bureau Chief	\$62.61	10	\$5,008			
Staff Biologist	\$50.02	145	\$58,023			
Field Biologists	\$48.83	25	\$9,766			
Administrative Assistants	\$35.65	3	\$856		<b>\$73,653</b>	
<b>Operating</b>						
<b>Coyote Tooth Examination</b>						
Billing from Matson's Lab for FY08 submission (will submit 7/08)			\$858			
Billing from Matson's Lab for FY08 submission (will submit 7/08)			\$775			
<b>Operating Cost</b>			\$1,400		<b>\$3,033</b>	
Project 17 - Summer Fawn Survey			\$3,500			
Project 18 - Fawn Composition Surveys			\$10,000			
Project 20 - Virginia Mtns BHS			\$4,000		<b>\$17,500</b>	
<b>Out-of-State Travel</b>						
Predator Workshop (Lansford)			\$1,200			
Conference (Lansford)			\$1,000			
AFWA Meeting - (Mason)			\$825		<b>\$3,025</b>	
<b>Emergency Projects Fund</b>						
<b>In-State Travel</b>						
<b>Mileage</b>						
	\$0.585	7500			<b>\$4,387</b>	
<b>Fixed Costs</b>						
Cell/Uniforms (Lansford)			\$692		<b>\$692</b>	
					<b>NDOW:</b>	<b>\$123,130</b>
<b>TOTAL ESTIMATED FY2009 PROGRAM EXPENDITURES:</b>					<b>\$493,948</b>	
<b>REVENUE:</b> FY09 Estimated fees collected from Tag Applications*:					<b>\$437,064</b>	<i>(Leg. amount)</i>
FY09 Estimated donations through Tag Application processes:					<b>\$22,099</b>	<i>(Leg. amount)</i>
<b>FY2009 TOTAL ESTIMATED REVENUE:</b>					<b>\$459,163</b>	
<b>June 30, 2009 Ending Balance (Carry Forward to FY2010):</b>					<b>\$581,428</b>	

\* Application processes are 2007 Fall Turkey, 2008 Spring Turkey, 2008 Guided Deer, 2008 Main Big Game, 2008 Second Big Game