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## Nevada Predator Management Plan Fiscal Year 2003 July 1, 2002 - June 30, 2003

### Summary

Six predator management projects were approved by the Board of Wildlife Commissioners on September 7, 2001. An overview of accomplishments of each is contained herein. Projects one through four were continuing efforts begun in FY 2000. Projects five and six were new starts. The total project budget was \$147,000.

The Board of Wildlife Commissioners took action on August 10, 2002 to continue with five of the six existing management projects. Projects 1,2,3,5, 6a, and 6b are continuing efforts. Project 4 was discontinued.

Four new projects were voted on by the Board of Wildlife Commissioners for implementation in FY 2003: Project 7, Bighorn Sheep Establishment Cost Comparison: East Range and Tobin Range. Project 8, Wilson Creek - White Rock, Mule Deer Predator/ Prey Relationship Project. Project 9, Predator Control to Protect Waterfowl on Key Pittman WMA. Project 10, Mormon Mountain, Desert Bighorn Sheep Predator/ Prey Relationship Project. Total projected budget for the FY 2003 management plan is \$301,886.

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### **Project 1: Raven Control to Enhance Sage Grouse Nesting Success**

#### *Project Description:*

Raven populations were controlled during the 2000-2002 sage grouse breeding and nesting seasons. The project treatment was conducted in the Grassy/Hart Camp area of Washoe County with control areas on the Sheldon National Wildlife Refuge and the Lone Willow area of Humboldt county. Total size of the project area is approximately 250 square miles. During the first year of the study, the size of the study area was at least a third larger. However, with the establishment of the Black Rock National Conservation Area and its wilderness areas in the summer of 2001, a good portion of the contiguous sage grouse habitat to the east was lost in terms of our ability to control ravens and harvest grouse. Ravens were controlled through the use of lethal doses of corvidicide-laced eggs and shooting. The corvidicide is injected into eggs that are specifically placed to attract ravens. Continued long term monitoring will aid in determining if raven control has a positive effect on sage grouse recruitment. This project is scheduled to continue through 2004.

*Reason for Conducting the Project:*

Sage grouse populations have been decreasing for the past 20 years west-wide. Nevada populations have followed this trend. This decline has generated interest in petitioning the U.S. Fish and Wildlife Service to protect the species under the provisions of the Endangered Species Act.

The Division of Wildlife has determined that sage grouse nest success and chick survival within the Grassy/ Stevens area are below levels needed for population growth or maintenance (chick/ hen ratio  $\geq 1.75$ ). The Division of Wildlife and University of Nevada, in cooperative studies, have also determined that a proximal cause of nest loss is raven predation.

*Services Provided by Wildlife Services:*

Wildlife Services will design and implement the raven control project. Wildlife Services will place baits in the field and monitor baits during the project duration. Wildlife Services will provide Nevada Division of Wildlife (NDOW) with Global Positioning System (GPS) coordinates for the locations of the treated areas. Wildlife Services will provide licensed applicators. Raven densities will be monitored during the project duration using standard survey methods. Wildlife Services will conduct a post-treatment analysis of the effectiveness of the control project. Reports of all surveys conducted will be provided by Wildlife Services to NDOW.

*Timing of Service:*

Control Period: Mid-March through May  
Evaluation Period: April through October  
Fiscal Years: FY 2000-2004

*Geographic Area of Project:*

Grassy/Hart Camp area of Washoe County is the treatment area and the Lone Willow area of Humboldt County and the Sheldon National Wildlife Refuge in Washoe and Humboldt Counties are the control area.

*Project Analysis:*

Sage Grouse chick production and survival will be measured by NDOW through the analysis of wings collected during the hunting season. Hen nesting success will also be assessed using hunter harvested Sage Grouse wings collected during the fall hunting

season. These “success” parameters will be compared between the “treatment” and “control” areas and compared to historic breeding success.

*Wildlife Services Budget Summary:*

	FY 2000	FY 2001	FY 2002	FY 2003
Requested	\$ 35,903	\$47,129	\$31,010	\$11,038
Expended	\$25,306	\$29,723	\$31,274	

*Summary of Control Activities:*

Predators removed during the FY 00 through FY 02 work period were reported by Wildlife Services as the following:

Species	Fiscal Year 00	Fiscal Year 01	Fiscal Year 02	Total
Coyote	92	6	0	98
Badger	8	1	0	9
Bobcat	3	0	0	3
Raven	345	250	194	789
Totals	448	257	194	899

Wildlife Services conducted raven surveys within the project area during the months March through July. Survey stations were at ½ mile intervals for 25 miles for a total of 50 stations. Surveys were conducted 3 times each month resulting in 150 stations per month. Results of ravens/ 10 miles<sup>2</sup> is as follow; March 8.3, April 4.3, May 4.0, June 2.3, and July 4.0. These results are similar to raven counts in the proceeding two years of the study but considerably less than the FY 2000 pretreatment raven survey resulting in 23.1 raven/ 10 miles<sup>2</sup> indicating ravens are being suppressed on sage grouse nesting areas within the project.

*Summary of Project Outcome:*

Sage Grouse wings provide biologists with a tool that is appropriate for measuring the species response to the predator removal. We depend upon hunters to provide the sample of wings during the hunting season.

During the fall of 2000 NDOW attempted to collect wings from hunter harvested birds in the control area. The wing collection effort met with limited success. There

were only a small number of hunters within the area and only 9 wings were collected the first year. During the second year, 2001, a special hunt was held with 75 permits available by application only and a 3/6 limit. A total of 115 hunter-harvested wings were collected with a chick/hen ratio of 1.24. For the same year, chick/hen ratios were 1.35 in the rest of Washoe County, 1.83 on the Sheldon and 2.06 in unit 031.

Although chick/ hen ratios were calculated from wings collected during the 2001 season, hen nesting success was not. This is a valuable tool in helping biologists determine at what point recruitment may be failing. This data should be collected in the future.

There are a total of 16 strutting grounds in and adjacent to the study area based on historical lek data. Of these 16 historical grounds, five have been counted on a yearly basis. Information gathered from these lek counts generate a breeding population estimate of 800 to 900 birds in the spring of 2001 and 500 to 600 birds in the spring of 2002. The decline in the 2002 estimate is probably a reflection of low production rates experienced during the summer of 2001.

After two years of this project within the Grassy-Stevens Camp area, sage grouse production rates continue to remain low and population levels are showing a downward trend. Continued long term monitoring will aid in determining if raven control has a positive effect on sage grouse recruitment. This project is scheduled to continue through 2004.

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## **Project 2: Predator Management to Enhance Sharp-tailed Grouse Reintroduction Success**

### *Project Description:*

Predator management was undertaken to facilitate successful sharp-tailed grouse reintroduction. Predator populations were controlled during the sharp-tailed grouse breeding and nesting season. The project was conducted in the Snake Range of Elko County in the immediate vicinity of the sharp-tailed grouse translocation sites. Ravens were controlled through the use of an avicide and other ground control activities. Coyotes were controlled primarily by aerial gunning and secondarily by ground control activities.

During the 2002 release, only 19 sharp-tailed grouse were translocated from Idaho to the project area. Results were positive for the few females that did nest with only one predated nest. An additional un-tagged hen was seen with a brood of chicks southeast of the release site. During the three years of the control project, 30 nests of radio-tagged grouse were located. Of those 30, 12 have hatched (40%). 13 have suffered nest

predation (43.3%), and 5 have been abandoned (16.6%). Nest site selection by sharp-tailed grouse the first year (2000) showed no preference between inside the control area and outside, in subsequent years (2001, 2002) nest site selection is highly in favor of inside the control area.

*Reason for Conducting the Project:*

Sharp-tailed grouse populations were extirpated in Nevada about 50 years ago. The Division of Wildlife is reintroducing the species back into Nevada. The source of sharp-tailed grouse is from the State of Idaho and transplant stock is very limited. Transplant efforts result in the release of approximately 50 birds per year, until FY 2001 when only 19 sharp-tailed grouse were released (5 females 14 males). The survival of each bird and their offspring is important for the success of the project.

*Services Provided by Wildlife Services:*

Wildlife Services will design and implement the control project. WS will evaluate raven and coyote densities and determine where effective population management can be implemented. WS will provide licensed applicators to apply avicide. Wildlife Services will provide Nevada Division of Wildlife (NDOW) with Global Positioning System (GPS) coordinates for the locations of the treated areas.

WS will conduct a pre and post-treatment analysis of raven and coyote densities utilizing standard survey methodologies. Reports of all surveys conducted will be provided by Wildlife Services to NDOW.

*Timing of Service:*

Control Period: Early March through June  
Evaluation Period: March through June  
Fiscal Years: FY 2000 - 2004

*Geographic Area of Project:*

The Snake Range, Elko County, Nevada. The approximate size of the treatment area is 175 square miles.

*Project Analysis:*

Success of the control effort will be difficult to measure since control is focused on a single location and thus there is no control area. There are no data on sharp-tailed grouse predation rates in Nevada. A sample of birds will be telemetered and monitored by NDOW and Idaho State University researchers so mortality causes may be

determined. The ultimate success of the control effort will be the successful re-establishment of a self sustaining population of sharp-tailed grouse in Nevada. A sustained predator management effort may enhance opportunities for population establishment.

*Wildlife Services Budget Summary:*

	FY 2000	FY 2001	FY 2002	FY 2003
Requested	\$26,807	\$38,479	\$34,010	\$17,832
Expended	\$21,703	\$33,135	\$31,419	

*Summary of Control Activities:*

Predators removed during each Fiscal Year were reported by Wildlife Services as the following:

Species	Fiscal Year 00	Fiscal Year 01	Fiscal Year 02	Total
Raven	454	470	370	1294
Coyote	130	102	38	270
Badger	2	0	1	3
Bobcat	0	0	0	0
Totals	586	572	409	1,567

Wildlife Services conducted raven surveys within the project area during the months March through July. Survey stations were at ½ mile intervals for 25 miles for a total of 50 stations. Surveys were conducted 3 times each month resulting in 150 stations per month. Results of ravens/ 10 miles<sup>2</sup> is as follow; March 2.3, April 4.0, May 1.0, June 1.6, and July 3.0. These results are similar to raven counts in the proceeding two years of the study but considerably less than the FY 2000 pretreatment raven survey resulting in 36.7 raven/ 10 miles<sup>2</sup> indicating ravens are being suppressed on sharp-tailed grouse nesting areas.

Scent-post station surveys were conducted by Wildlife Services during the months of March through July. Scent-post station were placed at ½ mile intervals for 25 miles for a total of 50 stations. Scent-post stations were conducted for 3 night each month resulting in 150 station-nights per month. Coyotes per station for each month is as follow; March 0.05, April 0.08, May 0.02, June 0.03, and July 0.06. Pre-treatment Scent

Station data (March 2000) resulted in 0.16 coyote per station. These results indicate that coyote densities within the unit were suppressed during the critical nesting period.

*Summary of Project Outcome:*

The Wildlife Services report illustrates a significant decrease in both avian nest predators (ravens) and the major mammal predator (coyotes) within the 175 square mile study area. Coyotes and ravens are the predators that would be expected to have the most serious deleterious affect on re-establishing Sharp-tailed grouse and other ground nesting upland game birds. Masters students have been following radio-collared sharp-tailed grouse in the study area and reported the following for Years 2000 - 2002.

Table 1. 2000 Nesting Status of Females Inside and Outside Control Area

	Total Nests	Nest Predation	Hatched	Abandoned	Predation %	Nesting Success
<b>Inside Control Area</b>	6	2	2	2	33.3%	33.3%
<b>Outside Control</b>	8	3	3	2	37.5%	37.5%
<b>Total</b>	14	5	5	4	35.7%	35.7%

Table 2. 2001 Nesting Status of Females Inside and Outside Control Area

	Total Nests	Nest Predation	Hatched	Abandoned	Predation %	Nesting Success
<b>Inside Control Area</b>	11	7	3	1	63.6%	27.3%
<b>Outside Control</b>	1	0	1	0	0.0%	100%
<b>Total</b>	12	7	4	1	58.3%	33.3%

Table 3. 2002 Nesting Status of Females Inside and Outside Control Area

	Total Nests	Nest Predation	Hatched	Abandoned	Predation %	Nesting Success
<b>Inside Control Area</b>	4	1	3	0	25%	75%
<b>Outside Control</b>	0	0	0	0	0.0%	0.0%
<b>Total</b>	4	1	3	0	25%	75%

The FY 2002 release consisted of only 19 sharp-tailed grouse, less than the planned release complement of 50. Results were positive for the few females that did nest, with only one predated nest. An additional un-tagged hen was seen with a brood of chicks southeast of the release site. The three years of the control project has resulted in 30 nests documented from radio-tagged grouse. Of those 30, 12 have hatched (40%). 13 have suffered nest predation (43.3%), and 5 have been abandoned (16.6%). Nest site selection by sharp-tailed grouse the first year (2000) showed no preference between inside the control area and outside. In subsequent years (2001, 2002) nest site

selection is highly in favor of inside the control area. Whether or not this is due to predator control is unknown. Nest predation still remains high, but some recruitment is evident. Also, some carry-over of grouse from one year to the next is being documented.

Table 4. Sharp-tailed Grouse Released in Snake Range, Elko County.

	2000	2001	2002	Totals
Males released (number radio-tagged)	41 (21)	36 (13)	14 (11)	91
Females released (number radio-tagged)	26 (25)	22 (20)	5 (5)	53
Totals	67	58	19	144

### **Project 3: Coyote Control to Enhance Pronghorn Re-establishment Success: Lone Valley (Discontinued)**

#### *Project Description:*

A total of 144 pronghorn antelope have been released into Lone Valley as part of the Division's ongoing big game reestablishment program. A coyote control effort will be conducted in the vicinity of the two recently released groups of antelope. The objective of the coyote control effort is to enhance potential for successful reestablishment of the pronghorn antelope populations.

#### *Reason for Conducting the Project:*

Pronghorn antelope have been released into Lone Valley as part of the Division's ongoing big game reestablishment program. The survival and reproductive success of these animals is important for the success of the reestablishment. Coyotes are known predators on pronghorn fawns. Larger populations of antelope can be sustained with some predation; however, very small antelope populations are vulnerable to extinction. This project is designed to help the successful reestablishment of pronghorn.

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

Wildlife Services will locate concentrations of pronghorn antelope from the air and conduct coyote control within the geographic vicinity of those antelope using aerial gunning and ground control methodology. Wildlife Services will conduct a post-treatment analysis of the coyote control effort. The effectiveness of the coyote control effort will be monitored by Wildlife Services utilizing standard methodologies.

*Timing of Service:*

Control Period: February through June, 2000 - 2002  
 Evaluation Period: February through June, 2000 - 2002  
 Fiscal Year: FY 2000 through 2002

*Geographic Area of Project:*

Ione Valley of Nye County.

*Project Analysis:*

The Division of Wildlife conducted surveys of pronghorn antelope populations in the fall of each year of the project to measure the number of adults and fawns in the population. The reestablishment goal was to achieve a post fawning period doe/fawn ratio of 30 plus fawns per 100 adult does.

*Wildlife Services Budget Summary:*

	FY 2000	FY 2001	FY 2002
Requested	\$27,348	\$9,266	\$17,210
Expended	\$12,218	\$19,056	\$15,654

*Summary of Control Activities:*

Predators removed in the Ione Valley during the FY 00 - 02 work periods were reported by Wildlife Services as the following:

Species	Fiscal Year 00	Fiscal Year 01	Fiscal Year 02	Total
Coyote	124	33	23	180
Bobcat	0	0	0	0
Totals	124	33	23	180

*Summary of Project Outcome:*

The Division of Wildlife conducted surveys of the pronghorn antelope population during the fall of 2000 and 2001 to measure the number of adults and fawns in the

pronghorn antelope population. The reestablishment effort was to be considered successful, if, after the fawning period, 30 plus fawns per 100 adult does were observed in the populations. However, sample size has precluded biologists from making fair and accurate assessments of recruitment efforts.

Sightings of pronghorn in area 17 surrounding lone Valley have become more common. The NDOW ground survey of September, 2001, resulted in a count of 72 antelope on Area 17, including those in lone Valley (15 in lone Valley). The observations in lone Valley were 7 males, 6 females, and 2 young for a ratio of 116/100/33. The Area 17 survey included 22 males, 37 female, and 13 young for a ratio of 59/100/35.

#### Pronghorn Antelope Surveys conducted on lone Valley

Date	Unit	Survey Type	Agency	Male	Female	Fawns	Total	Ratio (M/100F/Y)
07/00	171/172	Aerial	WS	6	21	9	36	23/100/43
09/00	171/172	Ground	NDOW	5	1	0	6	--
10/00	171/172	Aerial	NDOW	8	13	3	24	62/100/23
06/01	171/172	Aerial	WS	4	17	14	35	23/100/82
09/01	171/172	Ground	NDOW	7	6	2	15	116/100/33
07/02	171/172	Aerial	WS	8	23	13	44	35/100/56

During a large portion of the year, the antelope in lone Valley inhabit areas typified by rolling and rugged topography and scattered pinyon and juniper on the west bench of the Shoshone Range. This makes observations during surveys difficult. Another factor believed to be influencing observations is a lack of water resources during the hot/dry season. Biologists have noted that, during times of cooler temperatures and moist conditions, more antelope move into and utilize the lone Valley. Due to the limited use of the lone Valley by pronghorn antelope and the fact that antelope are widely scattered, this project was discontinued.

#### **Project 4: Coyote Control to Enhance Pronghorn Fawn Production: Vya - Massacre Area of Northern Washoe County**

##### *Project Description:*

Coyote control on pronghorn fawning grounds on Game Management Unit (GMU) 11 has been underway since FY 2000. Coyotes are a known predator of pronghorn

fawns. Coyote populations that remain stable during a period of pronghorn population declines may exhibit predation rates that hold pronghorn numbers below desirable numbers.

*Reason for Conducting the Project:*

Pronghorn fawn production across northwestern Nevada has been lower than expected since the population decline of 1992-93. Production in GMU 011 has been one of the lowest in the State. Research on the nearby Hart National Antelope Refuge in 1996- 1997 found that predation by coyotes accounted for 58% of all fawn mortalities (total fawn loss 86 of 104 born).

*Services Provided by Wildlife Services:*

Wildlife Services will design and implement the control project. WS will evaluate coyote densities and determine where effective population management can be implemented. Wildlife Services will provide Nevada Division of Wildlife (NDOW) with Global Positioning System (GPS) coordinates for the locations of removal, and data on numbers and methods of take.

WS will conduct a pre and post-treatment analysis of coyote densities utilizing standard survey methodologies. Reports of all surveys conducted will be provided by Wildlife Services to NDOW.

*Timing of Service:*

Control Period: April - May through June  
Evaluation Period: September through October  
Fiscal Years: 2000 - 200?

*Geographic Area of Project:*

Northern Washoe County in Game Management Unit (GMU) 011. Wildlife Services refers to this pronghorn herd as the "Surprise Antelope Herd."

*Project Analysis:*

Pronghorn populations should respond to lower predation rates by exhibiting increased fawn survival as measured by the fall composition survey. Population estimates should show an upward trend. Once numbers reach a threshold where predation no longer severely limits the population, growth will continue until another limiting factor is reached.

*Wildlife Services Budget Summary:*

	Fiscal Year 2000	Fiscal Year 2001	Fiscal Year 2002	Fiscal Year 03
Requested	\$ ---	\$ ---	\$17,770	\$18,179
Expended	\$5,400	\$20,633	\$22,269	

*Summary of Control Activities:*

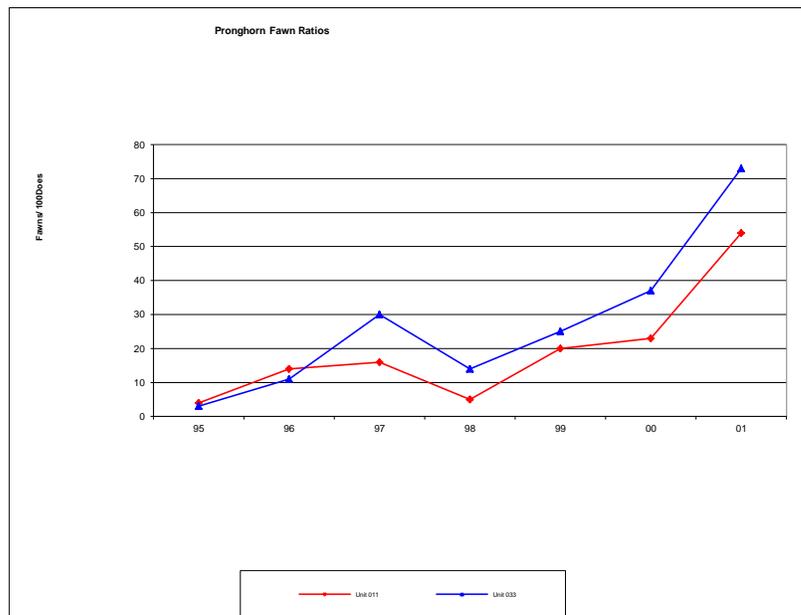
Species	Fiscal Year 00	Fiscal Year 01	Fiscal Year 02	Total
Coyote	35	101	89	225
Bobcat	0	0	0	0
Totals	35	101	89	225

Scent-post station surveys were conducted by Wildlife Services during the months of March through July. Scent-post stations were placed at ½ mile intervals for 25 miles for a total of 50 stations. Scent-post stations were conducted for 3 night each month resulting in 150 station-nights per month. Coyotes per station for each month is as follow; March 0.15, April 0.05, May 0.05, June 0.01, and July 0.02. These results indicate that

coyote densities within the unit were suppressed during the critical fawning period.

*Summary of Project Outcome:*

Pronghorn production has been monitored for several decades in northern Washoe and Humboldt counties. The following graph shows production:



The graph illustrates the

decline in production during the 1990's and the recovery in production values starting in 1999 and continuing through 2001. Year 2002 production values will be collected in September.

The following table demonstrates fawn production compared to both long-term and short-term averages:

Pronghorn Production Changes

Unit	Action	Fawns/ 100 does				Percent Change From	
		1999	2000	2001	Average	Long-Term Average	Short-term Average
011	Treatment	20	23	54	26.8	101.4%	134.8%
033	Control	25	37	73	41.3	76.8%	97.3%

The table shows that GMU 011's production rate increased 134% from its short term average and shows a 101% increase over the 20 year average. The Sheldon NWR, GMU 033, which serves as a control unit without coyote control, showed production up 97% between years and 76% above the long-term 20 year average.

Antelope populations in northern Washoe county are currently increasing. However, the increases that are being observed in GMU 011 seem to be more dramatic than in the control area of GMU 033. This indicates that, at least at this time, predator control may have a positive effect on fawn production in GMU 011.

Continued monitoring of this project will help determine if control efforts are the primary reason for the increases or if the increases on the control area are an anomaly. This project is recommended to continue through FY 2004.

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## Project 5: Protection of Upland Game Birds and Waterfowl - Moapa Valley

### *Project Description:*

Raven control to enhance nesting and early brood rearing success of wild turkey, Gambel's quail, and pheasant. Ravens are a known egg and chick predator and can be a major cause of production and recruitment failures. Ravens will be controlled through the use of lethal doses of poison and shooting. The poison will be injected into eggs that are specifically placed to attract ravens. The project duration is undetermined.

### *Reason for Conducting the Project:*

In Spring, 2001, Nevada Division of Wildlife personnel reported unexpectedly few observations of juvenile pheasants, turkeys and waterfowl. The pheasant population

has waned in the Region over the last decade. The decline may be due to a variety of factors including predation. Quail production also appears to have been impacted. Personnel at the Overton WMA cite excessive predation on turkey and pheasants. Pheasant nesting and reproduction is undetectable at the OWMA. An expanding raven population is suspected as having impacts on both pheasant and turkey populations and on the waterfowl that nest in the area. Division personnel provided the following observations: 1) as many as 12 nest were destroyed on the management area, 2) five instances of ravens flying with turkey eggs (in the bill), 3) two Class II poultts attended by two hens were harassed by 51 ravens in a field north of Overton, Nevada.

*Services Provided by Wildlife Services:*

Wildlife Services will design and implement the control project. WS will evaluate raven densities and determine where effective population management can be implemented. WS will provide licensed applicators to apply avicide. Wildlife Services will provide Nevada Division of Wildlife (NDOW) with Global Positioning System (GPS) coordinates for the locations of the treated areas.

WS will conduct a pre and post-treatment analysis of raven densities utilizing standard survey methodologies. Reports of all surveys conducted will be provided by Wildlife Services to NDOW.

*Timing of Service:*

Control Period: February through May  
 Evaluation Period: April through October  
 Fiscal Years: FY 2002 - 200?

*Geographic Area of Project:*

Muddy River Drainage and Apex Dump of Clark County.

*Project Analysis:*

The success of the control project will be evaluated in subsequent spring/summer months when upland game/waterfowl production surveys are conducted and recruitment to the populations is evaluated.

*Wildlife Services Budget Summary:*

	Fiscal Year 2002	Fiscal Year 2003

Requested	\$13,000	\$15,552
Expended	\$13,018	

*Summary of Control Activities:*

Wildlife Services conducted pre-treatment raven population census on and around the Overton WMA. Those surveys provided estimates of raven populations in the area and allowed Wildlife Services personnel to design a treatment plan that focused on raven travel corridors onto the WMA. Wildlife Services personnel started placement of DRC-1339 laced eggs on March 26, 2002 in areas surrounding known nesting locations for turkey and other ground nesting birds. Treatment continued for a 10 week period. Wildlife Services estimates that from March until June, 2002, 494 ravens were removed from the Moapa Valley. Wildlife Services conducted raven surveys from March through July, 2002. Results of ravens/ 10 miles<sup>2</sup> are as follow; March 150, April 14, May 13, and June 0.6. These surveys show ravens were suppressed during critical upland bird and waterfowl nests periods.

**Pre-treatment Raven Surveys for Moapa Valley**

Date	Apex	Warm Springs	Moapa Dairy	Logandale	Overton WMA	Total
11/20/01	140	2	449*	56	2	649
01/24/02	88	2	479*	6	0	575

\*Includes both ravens and crows

*Summary of Project Outcome:*

Pre-treatment surveys on Overton WMA were not conducted prior to the start of this project. Area biologists report that little to no recruitment was occurring prior to treatment in the area. Spring, 2002, brood surveys conducted between 4/6/02 and 6/12/02 are reported in the following table:

AGE CLASSES				
Species	CLASS I*	CLASS II*	CLASS III*	Total
Turkey	8,3,5,6,3,8,9,6,1,3,8 5,3,5,4,1	4,6		88
Quail	5,5	4,11		25
Mallard	11,9,11,8,9,10,3,7,6 10,5,13,6,9,6,10	7,8,5,6,8,4		171

Canada Goose	2,5,4,4,2,2,4,2,2,2,2,5,4,2,2	4,2,1,3,4,4,4,2,4,2,4,2	4,2,9	95
Total	265	99	15	379

\* number of chicks in each brood

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

#### *Project Description:*

The Nevada Division of Wildlife reintroduced desert bighorn sheep into the Delamar Range with a release of 19 animals in 1997 and an additional 25 desert bighorn in 1999. On November 29, 2002, NDOW augmented the small population in the Delamar Range with a release of 26 head brought in from the Muddy Mountains.

This project is designed to help protect existing and recently transplanted sheep from predation by mountain lions. Mountain lions are known predators of bighorn sheep. Concern over mountain lion predation on the Delamar Herd was confirmed in April, 2002 when one of the released ewes, equipped with a satellite collar, was confirmed killed by a mountain lion.

#### *Reason for Conducting the Project:*

Mountain lions are known predators of bighorn sheep. The Delamar Mountain Range has a history of lion predation on bighorn sheep. Each of the past bighorn sheep augmentation efforts into the Delamar Range has been met with losses to mountain lions. During the spring of 2001 a desert bighorn was found dead and determined to be a lion kill. Recently the loss of 2 desert bighorn from the 2002 augmentation were reported as lost to lion predation.

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

Wildlife Services will attempt to control resident lions if they are in conflict with bighorn sheep. WS will periodically monitor the area during the winter months to evaluate the number of migratory lions that move into the area. Lions that are found in proximity to bighorns will be controlled. Wildlife Services will provide dates, location and method of removal to NDOW for each lion removed.

#### *Timing of Service:*

September - March

#### *Geographic Area of Project:*

Delamar Mountain Range in Lincoln County.

*Project Analysis:*

Analysis of the effects of mountain lion control on the density of desert bighorn sheep will be through monitoring population growth. NDOW biologists will use aerial and ground surveys and population models to make pre-treatment versus post-treatment population trend comparisons.

*Wildlife Services Budget Summary:*

	FY 2002	FY 2003
Requested	\$17,000	\$840
Expended	\$17,523	

*Summary of Control Activities:*

Wildlife Services employee Jim Buhler conducted lion control measures within the Delamar Range. Due to mitigating circumstances, no lions were removed during the year. Lions are present and control activity is ongoing.

*Summary of Project Outcome:*

No bighorn sheep composition data has been collected since the release of the sheep augmentation in November, 2001.

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**Project 6B: Protection of Desert Sheep: East Walker River**

*Project Description:*

The Nevada Division of Wildlife reintroduced 21 desert bighorn sheep into the East Walker River Canyon of the Pine Grove Range, on October 28, 1993. A single ram was moved into the East Walker River area on October 27, 1994 to replace a radio-collared sheep that was a mortality. An augmentation of 21 additional desert bighorn were brought in from the River Mountains and released in the East Walker River area on October 28, 1995. The herd maintained stability for a period of three to four

years following the releases. Monitoring revealed some production. Survey data, incidental observations and other information indicate the herd began to fail around the period of 1997 to 1998. During the spring of 1996 a local Mason Valley rancher reported the sighting of six animals in the Wilson Canyon area. Ear tags on these animals were the same as those that originally existed along the East Walker, a distance of 26 miles to the south. Further reports indicate these animals took up residence in the Wilson Canyon area above the west fork of the Walker River.

As a result of several deaths and a declining population, a decision was made to attempt another augmentation and to provide predator control to assist the population in sustaining itself at a level where routine losses would not be detrimental to the herd.

An estimated 12 to 15 animals still existed in Unit 204 prior to the augmentation consisting of 22 desert bighorn sheep that occurred on October 30, 2001. These animals were captured in the Gabbs Valley Range on the 29th of October, 2001. This release complement contained 16 adult females, two yearling females, one female lamb and three yearling rams.

This control project is designed to help protect existing and newly transplanted sheep from predation by mountain lions. Mountain lions are known predators of bighorn sheep. Two bighorn sheep losses have been documented since the augmentation. The first was an adult ewe that turned out to be a lion kill within a week of release. It is possible this animal was weakened as a result of capture and transport. The second mortality was a radio-collared ewe. This mortality occurred around the first week of May, 2002. The cause of death is unknown.

#### *Reason for Conducting the Project:*

Two previous attempts to establish a population of desert bighorn have been unsuccessful as some sheep have emigrated outside of the release area and several sheep mortalities documented as lion kills have been observed at the site of previous sheep releases. Mountain lions are thought to be at least partially responsible for the poor success of the previous reintroduction attempts.

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

Wildlife Services will attempt to control resident lions if they are in conflict with bighorn sheep. WS will periodically monitor the area during the winter months to evaluate the number of migratory lions that move into the area. Lions that are found in proximity to bighorns will be controlled. Wildlife Services will provide dates, location and method of removal to NDOW for each lion removed.

#### *Timing of Service:*

September - March

*Geographic Area of Project:*

East Walker River area of Lyon and Mineral Counties.

*Project Analysis:*

Analysis of the effects of mountain lion control on the density of desert bighorn sheep will be through monitoring population growth. NDOW biologists will use aerial and ground surveys and population models to make pre-treatment versus post-treatment population trend comparisons.

*Wildlife Services Budget Summary:*

East Walker	Fiscal Year 2002	Fiscal Year 2003
Requested	\$17,000	\$840
Expended	\$16,227	

*Summary of Control Activities:*

Wildlife Services employee Tom Kilby began conducting lion control on October 18, 2001, in the Pine Grove/East Walker bighorn area. While working in the control area Tom found carcasses of two bighorn which had been released in 1995. He reported that he thought the animals had been dead for over a year, probably two or more years. These were a yearling ewe and an adult ewe released in 1995. During the pre-treatment period the lion hunter was successful in the removal of two resident lions in the release/predator treatment area. A large male lion was harvested along the river between Raccoon Beach and Grant Hot Springs on October 18, 2001. On the 25<sup>th</sup> of October, 2001, an adult female lion was removed from an area to the south and west of Zanis' cabin.

Two more lions were removed after the augmentation of October 30, 2001. Jack Spencer of Wildlife Services snared a very large male lion on December 17, 2001. The Flying M Ranch livestock manager at the Morgan Unit removed the fourth lion on May 6, 2002. This was a 10 year-old male lion that was in the yard at the Morgan Unit of the Flying M Ranch. Tom Kilby said that he felt that this is the same lion that had been in and out of the control area of the East Walker predator control project.

*Summary of Project Outcome:*

On July 1, 2002, a telemetry flight was conducted in an attempt to find collared bighorn sheep in the East Walker and Pine Grove area. Five ewes with five lambs were sighted on the north facing slope of a large hill between Racoon Beach and Grant's Hot Spring. The sheep were found in three groups. The first was a single ewe and lamb. The ewe was radio collared and had a green ear tag. A second group consisted of three ewes and three lambs. One of these three ewes had a radio collar and green ear tag. Surveyors were not able to determine if the other two ewes had ear tags or not. The last pair spotted was a single ewe and lamb, and surveyors could not tell if this ewe had ear tags. A total search time of two hours resulted in no other sheep sightings.

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**Project 7: Bighorn Sheep Establishment Cost Comparison:  
East Range and Tobin Range***Project Description:*

Comparison of the time and expenditures associated with augmentation of bighorn sheep population establishment. One introduction/ augmentation will be conducted under conditions of predator management, a second introduction will be without predator management. The expectation of this project is that the area which is under predator control should reach a sustainable population more rapidly than an area receiving no predator management. Analysis will be by direct associated expenditure on each area. Once an area has reached the management goal of a sustainable population, total costs will be calculated. The costs for each from time of first action (control and augmentation) will be compared. This comparison will help the Division determine the most cost effective process of pursuing future sheep reestablishment efforts.

*Reason for Conducting the Project:*

One of the Nevada Division of Wildlife's bighorn sheep management goals is to restore and maintain bighorn herds at optimal levels. This requires the Division to make frequent augmentations of bighorn sheep to areas with no existing sheep or areas of low density. These augmentations are designed to elevate the density of a specific herd to a sustainable population. Population biology studies of bighorn sheep indicate that ecological limiting factors can be overcome if sheep densities are sufficient to rebound after a stochastic event.

This study will investigate the costs associated with bighorn sheep population establishment on two similar ranges. One effort (East Range) will be proceeded by conducting predator control of mountain lions, and will undergo continued control in years

following sheep releases. The second effort (Tobin Range) will have no predator control before or after releases. Total expenditures on each area including costs of augmentation, and predator control will be documented until that time at which a sustainable herd of bighorn is established (80+ animals) for an area. The total output in time and expenditures will be compared to determine which method of release results in establishment of a viable herd for the least associated costs. These results may influence future direction for the Divisions bighorn sheep management.

*Services Provided by Wildlife Services:*

Wildlife Services will attempt to control resident lions within the East Range if they are in conflict with bighorn sheep. WS will periodically monitor the area during the winter months to evaluate the number of migratory lions that move into the area. Lions that are found in proximity to bighorns will be controlled. Wildlife Services will provide dates, location and method of removal to NDOW for each lion removed.

*Timing of Service:*

September - March

*Geographic Area of Project:*

Treatment : Southern end of East Range and the northern end of the Stillwater Range, Pershing County, Nevada. Area of concentration to be desert bighorn habitat north and south of McKinney pass including known habitat on Granite Mountain and in the Root Springs area.

Control: Southern end of the Tobin Range, Pershing County.

*Project Analysis:*

Analysis will be by direct associated expenditure on each area. Once an area has reached the management goal of a sustainable population, total costs will be calculated. The costs for each from time of first action (control and augmentation) will be compared. This comparison will help the Division determine the most cost effective process of future sheep augmentations.

The Division realizes that there is a real chance that some other unpredictable event could effect one or both of the bighorn sheep populations proposed in this study. An unforeseeable event could create a population crash that would ultimately negate the outcome of this project. While it is our hope that we will be able to analyze the outcome of this project as designed, we must acknowledge the possibility of mischance.

In order for the Tobin Range to properly function as a control site for the afore-

mentioned project, the Division may recommend to the Board of Wildlife Commissioners, a closure on mountain lion sport seasons in the vicinity of occupied bighorn sheep habitat within the Tobin Range for the duration of the project.

*Wildlife Services Budget Summary:*

East Range	Fiscal Year 2002	Fiscal Year 2003
Requested	\$600	\$
Expended		

***Project 8: Wilson Creek - White Rock, Mule Deer Predator/ Prey Relationship Project***

*Project Description:*

Mule deer populations in Game Management Area (GMU) 231, northeastern Lincoln County, have shown a gradual downward trend since the 1995 season. Despite indications that spring fawn survival is stable in this management unit, herd size is still decreasing. Predation could be a limiting factor. Studies indicate that predators can be a significant cause of mortality for mule deer. However, research also indicates that in order for predator control to be effective, the following conditions should exist: Deer populations below carrying capacity, predation identified as a limiting factor, and control efforts be designed to reduce predator populations enough to yield a response in deer populations, and control efforts be timed to be most effective.

In an effort to determine that these conditions exist within the proposed study area, thereby assuring that predator management actions are both warranted and effective, the Division proposes a one year evaluation period. After this evaluation the Division will use information collected to assess a need for protection of mule deer in GMU 231.

*Reason for conducting the project:*

Mule deer populations in Nevada have declined steadily since the late-1980s. GMU 231 has followed this same downward trend. Despite indications that spring fawn recruitment and survival is stable in this management unit, herd size is still decreasing. Predation could be a limiting factor. Studies indicate that predators can be a significant

cause of mortality for mule deer.

*Services provided by Wildlife Services:*

Wildlife Services will conduct an evaluation of the population status of predators within the proposed study area. They will, in cooperation with the Division of Wildlife, assess the effects of predators on mule deer survival. That assessment may include

delineation and audits of fawning grounds, migration corridors and winter range to help determine if predation is a limiting factor at specific times of the year.

If predators are found to be a limiting factor, Wildlife Services in cooperation with Division of Wildlife will design a management strategy that will best utilize their resources for the protection of mule deer within the study area.

*Timing of Service:*

Evaluation Period: FY 2003  
Length of Project: 1 - 5 years

*Geographic Location of Project:*

Treatment Area: Game Management Unit 231, Northeast Lincoln County Nevada.

Control Area: Area 22 (GMUs 221, 222, 223)

*Project Analysis:*

Studies have indicated that predators can be a significant cause of mortality for mule deer fawns. However, research also shows that, in order for predator control to be effective, the following conditions should exist: Deer populations are below carrying capacity, predation was identified as a limiting factor, control efforts reduce predator populations enough to yield results, control efforts be timed to be most effective. In an effort to determine that these conditions exist within the proposed study area, thereby assuring that predator management actions are both warranted and effective, the Division proposes a one year evaluation period.

Evaluation: Monitoring of deer populations on the treatment and control areas will be conducted by NDOW during spring (April/ May) when conditions on the ground indicate to biologists that fawning has commenced and conditions are optimal to make accurate counts. Likewise, in the winter (December), composition surveys will be conducted on wintering deer at that time when biologists feel migration is largely completed and conditions are optimal for accurate surveys. When possible mule deer

herd composition surveys will be replicated to ensure accurate counts and to minimize sampling bias.

Additionally, NDOW will re-evaluate deer population estimates for areas 22 and 23 for previous years to validate population data. Accuracy of population estimates depends largely on accurate assessment of mortality rates. In order to provide accurate mortality rates for the proposed treatment and control areas, 30 deer (15 for each area) will be captured and fitted with UHF-style radio transmitters, each equipped with an internal mortality sensor. Radio-collared deer will be monitored on a weekly basis to provide biologists with mortality rates needed for population modeling.

*Wildlife Services Budget Summary:*

	FY 2003	FY 2004	FY 2005
Requested	\$0	\$	\$
Expended			

*Nevada Division of Wildlife Budget Summary:*

Nevada Division of Wildlife will incur the following costs related to monitoring deer populations and predator/ prey interactions within the proposed treatment and control areas (NDOW will utilize funding from the predator management budget).

	FY 2003	FY 2004	FY 2005
Requested	\$44,400	\$14,400	\$
Expended			

***Project 9: Predator Control to Protect Waterfowl Nesting on Key Pittman WMA***

*Project Description:*

This project will provide protection to ground nesting waterfowl on the Key Pittman WMA in Lincoln, County. Waterfowl brood surveys indicate a recent decline in production, while sightings of nest predators, both avian and mammalian have sharply increased.

*Services Provided by Wildlife Services:*

Wildlife Services will design and implement the control project. WS will evaluate

raven and coyote densities and determine where effective population management can be implemented. WS will provide licensed applicators to apply avicide. WS will conduct a pre and post-treatment analysis of raven and mammalian predator densities utilizing standard survey methodologies.

*Timing of Service:*

Control Period: February through June  
 Evaluation Period: March through July

*Geographic Area of Project:*

Key Pittman Wildlife Management Area, Lincoln County, Nevada.

*Reason for conducting the Project:*

Spring of 2002 waterfowl brood counts and pair counts indicate substantial drops in production from previous years. Brood counts for Canada Geese, which normally average 70 to 80 goslings, only resulted in 5 goslings during the spring of 2002. Key Pittman WMA personnel have noticed in recent months a rise in the number of coyotes and ravens being seen on the WMA. One report relates an observation of 7 coyotes at one time on the Nesbitt Unit of the area.

*Project Analysis:*

Waterfowl nest production will be measured by NDOW personnel through the analysis of annual brood counts and pair counts. Success will be indicated by an increase in the production of waterfowl on Key Pittman WMA.

*Wildlife Services Budget Summary:*

	FY 03		
Requested	\$2,040		
Expended			

***Project 10: Mormon Mountains, Desert Bighorn Sheep Predator/ Prey Relationship Project***

*Project Description:*

Desert bighorn sheep within the Mormon Mountains once numbered nearly 500 animals. That number has decreased since its peak in 1994 to present estimates of 170. Composition survey data show that lamb production has remained steady during the past decade, however, the population continues to decline. This project is designed to acquire additional data on bighorn/ mountain lion relationships, and to determine if mountain lion predation is a significant limiting factor on desert bighorn sheep in the Mormon Mountains.

*Reason for Conducting the Project:*

The Mormon Mountain desert bighorn sheep population has declined over the past decade from an unknown limiting factor. Lamb/ ewe ratios since 1995 have averaged 45 lambs/ 100 ewes, which is above the estimated herd maintenance level (30-35/100). Yet the herd is still declining. Mountain lions are a known predator of bighorn sheep. This project is designed to determine if mountain lions are a limiting factor of desert bighorn sheep on this range.

*Services provided by Wildlife Services:*

Wildlife Services will conduct an evaluation of the population status of mountain lions within the proposed study area. They will, in cooperation with the Division of Wildlife, assess the effects of predators on desert bighorn sheep survival.

If predators are found to be a limiting factor, the Division of Wildlife, in cooperation with Wildlife Services, will design a management strategy that will best utilize their resources for the protection of mule deer within the study area.

*Timing of Service:*

Evaluation Period: FY 2003  
Length of Project: 1 - 5 years

*Geographic Location of Project:*

Proposed Treatment Area: Game Management Unit 271, Southeast Lincoln County Nevada.

*Project Analysis:*

Studies indicate that mountain lions can be a significant cause of mortality for bighorn sheep. The Division proposes a one year evaluation period to determine if mountain lions are a limiting factor on sheep population growth.

Nevada Division of Wildlife will work with Wildlife Services to analyze the number of lions within the proposed project area and the possible effects that lions may have upon the bighorn sheep herd.

Additionally, composition surveys will be conducted by NDOW to determine current herd size and demographics of the Mormon Mountain desert bighorns.

*Wildlife Services Budget Summary:*

	FY 2003	FY 2004	FY 2005
Requested	\$240	\$	\$
Expended			

### Project Budget Detail

Infrastructure Needs						
Personnel	Salary & Benefits	Vehicle	D/T Hire	Supplies	Administration	Total
GS-11 (6)	\$31,410	\$6,000	\$240	\$14,100	\$10,350	\$62,100
AD-6 (12)	\$28,014	\$8,873	\$1,100	\$13,960	\$12,257	\$64,204
AD-6 (12)	\$28,014	\$8,873	\$1,100	\$13,960	\$12,257	\$64,204
<b>Total</b>	<b>\$87,438</b>	<b>\$23,746</b>	<b>\$2,440</b>	<b>\$42,020</b>	<b>\$34,864</b>	<b>\$190,508</b>

Infrastructure needs, while shown in the above table as a separate cost, are more correctly seen as a facet of each project.

### WILDLIFE SERVICES

Project 1: Sage Grouse Project Budget				
BUDGET ITEM	FY00 (4 mos)	FY01	FY02	FY03
	Actual	Actual	Actual	Projected
1 Wildlife Technician - AD-4 (salary/ben.)	\$7,114	\$7,561	NA	\$8,298
APHIS Vehicles (1,800 miles/month @ .325)	\$3,117	\$3,086	NA	
Camp Trailer (\$100/month for 4 months)	\$400	\$450	NA	
Aerial Hunting (@ \$150/hr)	\$5,835*	\$660	NA	
Equipment (GPS, suppressed .22 rifle, binocs)	\$1,703	\$0	NA	
Supplies (DRC-1339, Eggs, .22 bullets, etc)	\$358	\$936	NA	\$900
Administration	\$6,779	\$17,030	NA	\$1,840
<b>TOTAL</b>	<b>\$25,306</b>	<b>\$29,723</b>	<b>\$31,274</b>	<b>\$11,038</b>

\* Included Vya antelope aerial hunting hours only for FY00.

**WILDLIFE SERVICES**

Project 2: Sharp-tailed Grouse Project Budget				
BUDGET ITEM	FY00 (4 mos)	FY01	FY02	FY03
	Actual	Actual	Actual	Projected
1 Wildlife Technician - AD-4 (salary/ben.)	\$6,964	\$7,781	NA	\$12,460
APHIS Vehicles (1,800 miles/month @ .325)	\$3,780	\$3,646	NA	
Camp Trailer (\$100/month for 4 months)	\$400	\$450	NA	
Aerial Hunting (20 hrs @ \$150/hr)	\$1,980	\$3,675	NA	\$1,500
Equipment (GPS, suppressed .22 rifle, binocs)	\$1,564	\$0	NA	
Supplies (DRC-1339, Eggs, .22 bullets, etc)	\$236	\$553	NA	\$900
Administration	\$6,779	\$17,030	NA	\$2,972
<b>TOTAL</b>	<b>\$21,703</b>	<b>\$33,135</b>	<b>\$34,419</b>	<b>\$17,832</b>

**WILDLIFE SERVICES**

Project 3: Pronghorn- Ione Budget (Discontinued)			
BUDGET ITEM	FY00 (4 mos)	FY01	FY02
	Actual	Actual	Actual
Aerial Hunting (@ \$150/hr)	\$3,660	\$5,595	NA
Per Diem (Pilot & Gunner at \$75/day for 10 days ea.)	-	\$452	NA
Administration	\$3,013	\$10,854	NA
<b>TOTAL</b>	<b>\$6,673</b>	<b>\$16,901</b>	<b>\$15,654</b>

**WILDLIFE SERVICES**

Project 4: North Washoe Pronghorn Antelope Project Budget				
BUDGET ITEM	FY00 (4 mos)	FY01	FY02	FY03
	Actual	Actual	Actual	Projected
1 Wildlife Technician - AD-4 (salary/ben.)			NA	\$4,149
Aerial Hunting	\$2,387	\$9,780	NA	\$10,500
Supplies			NA	\$500
Administration	\$3,013	\$10,853	NA	\$3,030

Project 4: North Washoe Pronghorn Antelope Project Budget				
TOTAL	\$5,400	\$20,633	\$22,269	\$18,179

**WILDLIFE SERVICES**

Project 5: Protection of Upland Game Birds and Waterfowl - Moapa Valley			
BUDGET ITEM	FY02	FY03	FY04
	Actual	Projected	Projected
1 Wildlife Technician - AD-4 (salary/ben.)	NA	\$12,460	
Supplies	NA	\$500	
Administration	NA	\$2,592	
TOTAL	\$13,018	\$15,552	

**WILDLIFE SERVICES**

Project 6a: Protection of Bighorn Sheep Reintroductions: Delamar Range Desert Sheep Augmentation			
BUDGET ITEM	FY02	FY03	FY04
	Actual	Projected	Projected
Supplies	NA	\$700	
Administration	NA	\$140	
TOTAL	\$17,523	\$840	

**WILDLIFE SERVICES**

Project 6b: Protection of Bighorn Sheep Reintroductions: East Walker Desert Sheep Augmentation			
BUDGET ITEM	FY02	FY03	FY04
	Actual	Projected	Projected
Supplies	NA	\$700	
Administration	NA	\$140	
TOTAL	\$16,227	\$840	

**WILDLIFE SERVICES**

Project 7: Bighorn Sheep Establishment Cost Comparison: East Range and Tobin Range			

Project 7: Bighorn Sheep Establishment Cost Comparison: East Range and Tobin Range			
BUDGET ITEM	FY03	FY04	FY05
	Projected	Projected	Projected
Supplies	\$500		
Administration	\$100		
<b>TOTAL</b>	<b>\$600</b>		

**WILDLIFE SERVICES**

Project 8: Wilson Creek - White Rock, Mule Deer Predator/ Prey Project			
BUDGET ITEM	FY03	FY04	FY05
	Projected	Projected	Projected
Administration	\$0		
<b>TOTAL</b>	<b>\$0</b>		

**NEVADA DIVISION OF WILDLIFE**

Project 8: Wilson Creek - White Rock, Mule Deer Predator/ Prey Project			
BUDGET ITEM	FY03	FY04	FY05
	Projected	Projected	Projected
Deer Capture and handling (30 animals @ \$500/animal)	\$15,000	\$0	\$0
Radio Collars (30 collars @ \$500/ collar)	\$15,000	\$0	\$0
Monitoring of animals (airplane, pilot, observer 6 hours/ month @ \$200/hr for 12 months)	\$14,400	\$14,400	
<b>TOTAL</b>	<b>\$44,400</b>	<b>\$14,400</b>	

**WILDLIFE SERVICES**

Project 9: Predator Control to Protect Waterfowl Nesting on Key Pittman WMA				
BUDGET ITEM	FY03	FY04	FY05	FY06
	Projected	Projected	Projected	Projected
Supplies	\$500			
Aerial Hunting	\$1,200			
Administration	\$340			

Project 9: Predator Control to Protect Waterfowl Nesting on Key Pittman WMA				
TOTAL	\$2,040			

**WILDLIFE SERVICES**

Project 10: Mormon Mountain, Desert Bighorn Sheep Predator/ Prey Relationship Project				
BUDGET ITEM	FY03	FY04	FY05	FY06
	Projected	Projected	Projected	Projected
Supplies	\$200			
Administration	\$40			
TOTAL	\$240			

**APPENDIX**  
**Predator Management Project Summary**

Project Segment	Description	Species Protected	Control Species	Project Status	Project Costs								
					2000		2001		2002		2003		
					Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	
	Infrastructure											\$190,325	
1	Grassy Sage Grouse	Sage Grouse	Ravens	Active	\$35,903	\$25,306	\$47,129	\$29,723	\$31,010	\$31,274	\$11,038		
2	Sharp-tailed Grouse Re-establishment	Sharp-tailed Grouse	Ravens, Coyotes, Badgers, Bobcats	Active	\$26,607	\$21,703	\$38,479	\$33,135	\$34,010	\$31,419	\$17,832		
3	Ione Valley - Pronghorn Introduction	Pronghorn	Coyotes, Bobcats	Active	\$13,674	\$6,673	\$4,633	\$16,901	\$17,210	\$15,654	Discontinue		
4	Vya Pronghorn Production	Pronghorn	Coyotes, Bobcats	Active	\$0	\$5,400	\$0	\$20,633	\$17,770	\$22,269	\$18,179		
5	Moapa Upland Game	Turkey, Pheasant, Quail, Waterfowl	Ravens	Active					\$13,000	\$13,018	\$15,552		
6a	Delamar Range Bighorn	Desert Sheep	Mt. Lions	Active					\$17,000	\$17,523	\$840		
6b	East Walker Bighorn	Desert Sheep	Mt. Lions	Active					\$17,000	\$16,227	\$840		
7	East Range/ Tobin Range	Desert Sheep	Mt. Lions	New							\$600		
8	Wilson Creek Range	Mule Deer	No Control	New							\$44,400		
9	Key Pittman WMA	Waterfowl	Ravens, Mammalian preds	New							\$2,040		
10	Mormon Mountains	Desert Sheep	No Control	New							\$240		
				<b>Totals</b>	\$76,184	\$59,082	\$90,241	\$100,392	\$147,000	147,350	\$301,886		