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Nevada Department of Wildlife
Director
1100 Valley Road
Reno, NV 89512

U.S. Fish & Wildlife Service
Department of the Interior
18th and C Streets
Washington, DC, 20240
Summary

The goal of the Nevada Department of Wildlife’s (NDOW’s) Predator Management Program is to conduct projects consistent with the terrestrial portion of the Department’s Mission “to preserve, protect, manage and restore wildlife and its habitat for the aesthetic, scientific, educational, recreational and economic benefits to citizens of Nevada and the United States.” In addition, provisions outlined in NRS 502.253 authorize the collection of a $3 fee for each big game tag application, depositing the revenue from such a fee collection into the Wildlife Fund Account and used by the Department to 1) manage and control predatory wildlife, 2) pay for management activities relating to the protection of non-predatory game animals and sensitive wildlife species and related wildlife habitat, 3) conduct research, as needed, to determine successful techniques for managing and controlling predatory wildlife, including studies necessary to ensure effective programs for the management and control of predatory wildlife, and 4) fund education of the general public concerning the management and control of predatory wildlife. Expending a portion of the money collected to enable the State Department of Agriculture and other contractors and grantees to develop and carry out programs designed as described above; developing and conducting predator management activities under the guidance of the Wildlife Commission; and a provision that the $3 fee monies remain in the Wildlife Fund Account and do not revert to State General Funds at the end of any fiscal year, are additional provisions of the Statute.

NDOW maintains a philosophy that predator management is a tool to be applied deliberately and strategically. Predator management may include lethal removal of predators or corvids, nonlethal management of predator or corvid populations, habitat management to promote more robust prey populations which are better able to sustain predation, monitoring and modeling select predator populations, managing for healthy predator populations, and public education. Predator management should be applied on a case-by-case basis, with clear goals, and based on an objective scientific analysis of available data. It should be applied with proper intensity and at a focused scale. Equally important, projects should be monitored to determine whether desired results are achieved.

NDOW is committed to using all available tools and the most up-to-date science, including strategic use of predator management, to preserve our wildlife heritage for the long term.
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Below are the three categories of projects in the predator management plan. Some projects have aspects of multiple types within a single activity or action. The project types are listed throughout this document.

Types of Projects

1. **Implementation**: The primary objective is to implement management of predators through lethal or non-lethal means. NDOW will collaborate with USDA Wildlife Services and private contractors to conduct lethal and non-lethal management of predators. NDOW and collaborators will collect all possible data to make inference on outcome and effectiveness of project, although this is not the primary objective.

2. **Experimental Management**: The primary objectives are management of predators through lethal or non-lethal means and to learn the effects of a novel management technique. NDOW will collaborate with Wildlife Services, private contractors, and other wildlife professionals to conduct lethal or non-lethal management of predators and will put forethought into project design. Expected outcomes will include project effectiveness, agency reports, and possible peer-reviewed publications.

3. **Experimentation**: The primary objective is for increasing knowledge of predators in Nevada. NDOW may collaborate with other wildlife professionals to study and learn about predators of Nevada. Expected outcomes will include agency reports, peer-reviewed publications, and information on how to better manage Nevada’s predators.
FY 2016 PROJECTS RECOMMENDED FOR CONTINUATION

Project 21: Greater Sage-Grouse Protection (Raven Removal)

Project Type

Implementation and Experimental Management

Goals

1. Understand where raven densities may be negatively affecting Great Sage-Grouse populations.
2. Determine what method of raven control is appropriate.
3. Increase populations of Greater Sage-Grouse in localized areas and where deemed feasible.

Project Area

Statewide, where determined appropriate

Implication for Management

1. The removal of ravens is intended to result in long-term protection for Greater Sage-Grouse populations.
2. Monitoring of raven densities will provide managers with appropriate raven control locations, potentially through a resource selection function (RSF) model designed to display areas of high raven density that overlap with important sage-grouse use areas.

Introduction

Though predation is a naturally occurring phenomenon for Greater Sage-Grouse, their populations can be lower or suppressed by abiotic factors such as dry climate and loss of quality habitat. Increases in predator numbers can also cause decreases in Greater Sage-Grouse populations; raven abundance has tripled throughout their native ranges, with increases as much as 1,500% in some areas (Boarman 1993, Coates et al. 2007, 2014, Sauer et al. 2011).

Methods

Following the Objective 1.1, 1.2, and 1.3 from the 2014 Nevada Greater Sage-Grouse Conservation Plan (http://sagebrusheco.nv.gov/), a standard protocol will be set for raven removal efforts (See appendix).
**Lethal Removal**

Chicken eggs treated with the poison (DRC-1339) will be deployed to remove ravens (Coates et al. 2007). To reduce non-target species exposure, no eggs will be left in the environment for over 168 hours. No leftover eggs will be used on subsequent treatments. All remaining eggs and any dead ravens found will be collected and disposed of properly as per poison control protocol. Raven take will be estimated at 1 raven per 11 eggs gone (Coates et al. 2007).

**Monitoring**

Point counts for ravens will be conducted from March through July of each year, which corresponds with Greater Sage-Grouse nesting and brood-rearing season. Surveys will be similar to Ralph et al. (1995) and will include surveys: lasting 10 minutes; conducted between sunrise and 1400; conducted under favorable weather conditions; and stratified randomly across study areas (Luginbuhl et al. 2001, Coates et al. 2014).

**Recommendations**

Fund Project 21 through FY 2018. Evaluate efficacy of Project 21 annually.

**Budget**

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Subproject 21-02: Raven Removal and Greater Sage-Grouse Nest Success

Project Type

Implementation and Experimental Management

Goals

1. Understand where raven densities may be negatively affecting Great Sage-Grouse populations.
2. Determine what method of raven control is appropriate.
3. Increase populations of Greater Sage-Grouse.

Project Area

Statewide, where determined appropriate

Implication for Management

1. The removal of ravens and predators is intended to result in long-term protection for Greater Sage-Grouse populations.
2. Monitoring of raven densities will provide managers with needed raven control locations, potentially through a RSF.

Introduction

Though predation is a naturally occurring phenomenon for Greater Sage-Grouse, their populations can be lower or suppressed by abiotic factors such as dry climate and loss of quality habitat. Increases in predator numbers can also cause decreases in Greater Sage-Grouse populations; raven abundance has tripled throughout their native home ranges, with increases as much as 1,500% in some areas (Boarman 1993, Coates et al. 2007, 2014, Sauer et al. 2011).

Methods

Lethal Removal

Chicken eggs treated with the poison (DRC-1339) will be deployed to remove ravens (Coates et al. 2007). To reduce non-target species exposure, no eggs will be left in the environment for over 168 hours. No leftover eggs will be used on subsequent treatments. All remaining eggs and any dead ravens found were collected and disposed of properly as per poison control protocol. Raven take will be estimated at 1 raven per 11 eggs gone (Coates et al. 2007).

Great Sage-Grouse Monitoring
Leks are counted a minimum of four times from March to May each year. Counts are conducted from 30 minutes before sunrise to 1.5 hours after sunrise. Greater Sage-Grouse are marked with ATS VHF transmitters, and throughout the nesting and brood-rearing periods are located at least twice per week. Greater Sage-Grouse nests are monitored a minimum of three times per week and classified as successful, depredated, partially depredated, or abandoned. Since 2009, 39 nests have received camouflaged micro-cameras with time-lapsed video recorders to determine the outcome or to identify predator of nest.

Development of Resource Selection Function (RSF)

Development of RSF analyses for raven habitat in Nevada will provide NDOW with information to more effectively understand raven population patterns across the state and to subsequently, effectively implement management actions to affect raven predation pressures on greater sage-grouse. The RSF mapping process is a data-driven approach that uses raven survey data and multiple environmental factors, including spatial land cover types at multiple spatial scales, edge (interface between two land cover types) indices, energy infrastructure, and other anthropogenic subsidies to determine the landscape parameters for which ravens select. The USGS has recently carried out this habitat mapping approach for ravens within the Idaho National Laboratory in southeastern Idaho (Coates et al. 2014).

Recommendations

Fund subproject 21-02 through FY 2016.

Budget

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**Project 22: Mule Deer-Game Enhancement**

**Project Type**

Implementation and Experimental Management

**Goal**

Enhance mule deer and other game populations where they may be at risk, experiencing chronic low carrying capacity, or catastrophic decline.

**Project Area**

Statewide, where determined appropriate

**Implication for Management**

1. The removal of predators is intended to result in enhancement of mule deer and other big game herds.
2. Further data collection and analysis will determine the effectiveness of this project and direct wildlife management policy in the future statewide.

**Introduction**

In 2009, Project 22 was initiated statewide to provide flexibility and opportunity to respond quickly to conditions on the ground that biologists believe could be adversely affecting population viability of select mule deer herds and other big game populations. Project area selection criteria were developed to define where and when a predator control policy would be deployed to enhance or protect sensitive big game populations.

**Methods**

NDOW funds Wildlife Services and private contractors to remove as many predators as possible given the constraints of weather, time, and available funding using aerial gunning, hounds, calling, call boxes, shooting, foot-hold traps, and snares to accomplish the treatment. Selective and timely control work focused on critical seasonal big game ranges. The timing of control work will be in accordance with individual project criteria, but occur primarily on critical winter ranges and summer fawning areas or in release-augmentation areas.

**Recommendations**

Fund subproject 22 through FY 2020. Evaluate efficacy of project 22 annually.
Subproject 22-01: Mountain Lion Removal to Protect California Bighorn Sheep

Project Type

Implementation

Goals

1. Remove mountain lions to proactively protect newly reintroduced California bighorn sheep.
2. Determine mountain lion age structure, sex ratio, and diet.

Project Area

Washoe County in Units 011, 012 and 013.

Implication for Management

Decrease predation from mountain lions for all age classes of newly reintroduced California bighorn sheep, resulting in an established, viable population.

Introduction

Attempts have been made to establish a California bighorn sheep population in Area 01. Significant levels of mountain lion-induced mortality have been observed. California bighorn sheep populations may require a reduction in mountain lion densities to reach population viability.

Methods

NDOW biologists and Wildlife Services will collaborate to identify current and future California bighorn sheep locations and determine the best methods to reduce California bighorn sheep mortality. Mountain lion traps, snares, baits, and call boxes will be set to proactively capture mountain lions as they immigrate into the defined sensitive areas.

Recommendations

Fund subproject 22-01 through FY 2017. Evaluate efficacy of subproject 22-01 annually.
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Subproject 22-14 Coyote Den Density Effects on Mule Deer Fawns and Other Wildlife Species
Formally: Diamond Roberts Mule Deer Fawns

Project Type

Experimental Management and Implementation (Future Years)

Goals

1. Determine the number of active coyote dens in the Diamond Mountains and the diet of pups at discovered dens.
2. Determine the density, abundance, and/or occupancy of prey species in the Diamonds including lagomorphs, Greater Sage-Grouse, and mule deer.

Project Area

Diamond Mountains in Unit 144

Implication for Management

1. Understand how the increased caloric requirements to support coyote pups influences mule deer fawns and other wildlife species.
2. Determine the number of coyote dens across the landscape, the number of coyote dens in sensitive mule deer fawning habitat, and calculate the effort for effective control.
3. Determine efficacy of removing specific pairs of coyotes to benefit recruitment of mule deer and benefit other wildlife species.

Introduction

Coyotes face an increase in caloric need when raising pups, both through an increase in parent energetic output and feeding growing pups. Parent coyotes have been found to be exclusively responsible for sheep predation, removing coyote pups from dens or preventing parents from breeding has been demonstrated to reduce predation on domestic livestock (Till and Knowlton 1983, Sacks et al. 1999, Seidler et al. 2014). Parent coyotes and their pups may consume a drastically different diet than their non-parent counterparts at the same time of year; this difference in diet likely requires larger prey, including mule deer fawns. Coyote removal may increase mule deer fawn and other wildlife species reproductive output.
Methods

Coyote dens will be found using a combination of a private contractor who specializes in coyote denning and Owyhee Air using an infrared camera. Lagomorph densities will be estimated driving road transects, using spotlights to detect individuals (Smith and Nydegger 1985, Ralls and Eberhardt 1997). Greater Sage grouse will be monitored through lek counts and wing counts. Mesocarnivores and mountain lion occupancy will be estimated using camera traps placed in a grid system (Mann et al. 2014).

Recommendations

Fund Project 32 through FY 2020. Evaluate efficacy of Project 32 annually.

Budget

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Subproject 22-074: Mountain Lion Removal and Diet Analysis for the Protection of Rocky Mountain Bighorn Sheep
Formally: Protection of Rocky Mountain Bighorn Sheep in Badlands, Unit 074

Project Type

Implementation and Experimental Management

Goals

1. Remove mountain lions within close proximity of Rocky Mountain bighorn sheep to increase sheep numbers.
2. Increase understanding of seasonal habitat use by Rocky Mountain bighorn sheep.
3. Establish stable isotope signatures for prey species in Unit 074, and compare these signatures to removed mountain lion signatures to determine mountain lion diet.

Project Area

Elko County within Unit 074

Implication for Management

1. Decrease predation from mountain lions for all age classes of Rocky Mountain bighorn sheep.
2. Removal of mountain lions will increase understanding of population dynamics and age structure, and will help to determine the level of exploitation in the population.
3. Stable isotopes collected from mountain lions and prey species will provide insight of mountain lion diet on a weekly, monthly, and lifetime span for Unit 074 and potentially statewide.

Introduction

The resident Rocky Mountain bighorn sheep herd experienced a die-off in 1999. Two years following the die-off the lamb recruitment was low, remaining consistent with bighorn sheep die-offs. Since then the average lamb recruitment has been 48 lambs:100 ewes. This level of recruitment should have resulted in an increasing sheep herd; however sheep numbers have remained stagnant.

The Contact area is a major deer winter range. It is possible that mountain lions following the deer herd to winter range from the nearby Jarbidge Mountains are remaining after the deer have left in the spring and switching their diet to bighorn. Some mountain lions may be staying in the area on a year-round basis with their primary food source being California bighorn sheep.
Methods

Minimum convex polygons (MCP) will be drawn around GPS data from collared sheep. These MCPs will be used to define the area for mountain lion removal (Fig 1). Removals will be conducted in winter months to take advantage of snow conditions. Removals will be conducted with mountain lion hounds; fresh samples of blood and tissue are imperative for stable isotope examples. Samples for stable isotope analysis will be collected from prey including Rocky Mountain bighorn sheep, mule deer, elk, jackrabbits, bobcats, and coyotes through helicopter captures, collected specimens, hunters, trappers, and road kill.

Figure 1. Minimum convex polygons and GPS points from two ewes collared for subproject 22-074.

Recommendations

Fund subproject 22-074 through FY 2018. Evaluate efficacy of subproject 22-074 annually.
## Budget

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**Project 25: Coyote Diet and Habitat Selection**
Formally: Coyote Ecology Analysis

**Project Type**

Experimentation

**Goals**

1. How does availability of lagomorphs and small mammals influence coyote abundance, diet, and home range size?
2. What is the microhabitat use of coyotes in central Nevada and how do coyotes differ amongst individuals, across seasons, and throughout different habitats?

**Project Area**

Toquima and Monitor Mountains in Units 161 and 162

**Implication for Management**

1. Improved success of game population management is a potential result of an improved understanding of coyote dietary preference, coyote productivity and prey switching capabilities.
2. Improved understanding of coyote population dynamics and resource partitioning could improve our ability to manage wildlife habitats for optimum wildlife productivity statewide.

**Introduction**

Lethal management of coyotes in Nevada and throughout the West for livestock protection and to enhance populations of game species such as mule deer remains controversial (Knowlton et al. 1999, Martínez-Espiñeira 2006). To better address stakeholder concerns and develop strategic approaches to balancing the need for coyote control with sustaining desired wildlife populations it is important to have a better understanding of coyote responses to resources availability prior implementing control programs (Jackson 2014).

**Methods**

Iridium GPS locations for each coyote have been compiled, and 30 random locations collected between denning and pup rearing season (April 16 to August 15; Gese 2005) will be selected for microhabitat space use analysis. Twenty variables will be measured at each location (Mosby et al. 2012). LANDFIRE will be used to classify habitat types in a 1 km circle surrounding each den (Rollins et al. 2006, Squires et al. 2008, Rollins 2009). Vegetation will be
reclassified with the LANDFIRE vegetation map into seven habitat (forest, grassland, road, sagebrush, mesic shrub-meadow, riparian and mesic-meadow) as described by (Gese et al. 1996a, b). Thirteen variables will be collected at each den site and den area.

Recommendations

Fund project 25 through FY 2016.

Budget

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Project 32: Mountain Lion, Black Bear, and Mule Deer Interactions

Project Type

Experimentation

Goals

1. Increase understanding of apex predator resource partitioning, competition, and commensalism in desert ranges where black bears have established territories recently that overlap those of mountain lions.
2. Determine if mountain lion predation rates on mule deer increase in areas occupied by black bears.
3. Determine if mountain lion conflicts with humans increase where black bears are present (i.e., prey switching to less energetically expensive prey such as domestic livestock).

Project Area

Units 014, 015, 021, 192, 194, 195, 196, 201, 202, 203, 204, 291

Implication for Management

1. Improved understanding of lion and bear dietary preference, dietary overlap and prey switching capabilities will provide insight for better big game population management.
2. Targeted predator population management could improve attendant big game population management which has implications for big game tag allocation.
3. Mountain lion subsidies may increase black bear recolonization eastward into Nevada, which could have direct implications on future management decisions.
4. Use field based scientific data to understand, predict, and potentially mitigate, changes in human-lion conflict where bears are re-establishing historic ranges.

Introduction

Black bears have expanded their distribution in western Nevada recently to include historical bear habitat in desert mountain ranges east of the Sierra and Carson Front (Beckmann and Berger 2003, Lackey et al. 2013). Recent findings have shown during summer months 50% of mountain lion killed deer are scavenged by black bears (Andreasen 2014, unpublished data).
Recolonizing black bears in Nevada currently provides a unique opportunity to determine if mountain lion killed mule deer subsidize the bear population increase.

Methods

A minimum of 18 black bears, 18 mountain lions, and 60 mule deer will be captured and fitted with Vectronic brand GPS PLUS collars with Proximity sensors to assess behavioral responses of each species upon close interaction. We will attempt to maintain sample sizes of six bears and six mountain lions collared in each of our three study areas for five years. Mule deer will be fit with Vectronic brand GPS PLUS Vertex Survey collars to monitor daily survival of individuals and to estimate annual adult doe survival in each study area. To further maximize probability of recording carnivore-carnivore interactions, we will monitor kill sites of collared mountain lions with real-time trail cameras and target black bears scavenging from lion kills for collaring with GPS proximity collars.

Recommendations

Fund Project 32 through FY 2020. Evaluate efficacy of Project 32 annually (see appendix).

Budget

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Project 35: Using Genetic Testing to Identify Origin of Red Fox

Project Type

Experimentation

Goals

1. Determine origins of red fox population expanding into high priority Greater Sage-Grouse habitat in the Great Basin.
3. Assess population of red fox in state for possible status reclassification.
4. Assess population growth of red fox to determine potential for an increase in a known Greater Sage-Grouse predator.

Project Area

Elko, White Pine, Lander, and Eureka counties

Implication for Management

Improved understanding of influences of mesocarnivores on native ecosystems will give managers more and better tools to manage predation issues and wildlife populations in the future.

Introduction

The red fox can be a significant predator of ground-nesting birds and is known to affect several endangered ground-nesting bird species, including Greater Sage-Grouse in the western United States (Connelly et al. 2000, Slater 2003) As of 1996, red fox numbers appeared to be expanding in northeast Nevada and were presumed to be non-native in origin (Kamler and Ballard 2002). Recent trapping activity in this part of the state suggests that expansion has increased rapidly in the past 2 years and preliminary data from some locations support the suggestion that these may be of a non-native origin (R. Stoeberl, personal communication).

Red foxes occurred historically at low abundance among “sky island” mountain ranges of the Great Basin (Perrine et al. 2007). However, red foxes have increased significantly in abundance and range, and currently occur in many areas of Nevada that overlap sage-grouse lek and nesting habitat where they were not formerly known to occur. Thus, it is likely that this efficient avian predator could pose a significant threat to Greater Sage-Grouse in Nevada. The genetic origin of these foxes is currently unknown.
Methods

A UC Davis genetics lab will genotype these fox samples with 33 high-resolution nuclear loci to compare among these samples and with historical and modern reference samples previously published (Aubry et al. 2009, Sacks et al. 2011). They will analyze genotypes to determine native vs. non-native ancestry, genetic affinities of native and non-native samples to assess hybridization, and genetic affinities of non-native northeast Nevada genotypes with those from populations in western Utah and southern Idaho to assess source of origin.

Recommendations

Fund Project 35 through FY 2016. See appendix.

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FY 2016 NEWLY PROPOSED PROJECTS

Project 36: Determining Fate of Incidentally Captured Mountain Lions

Project Type

Implementation, Experimental Management, and Experimentation

Goals

1. Understand how incidental captures of mountain lions in foothold traps affect their survival rates.
2. Determine if trap type, size, or set type influence mountain lion capture rates.
3. Establish a decision matrix for release of incidentally captured mountain lions.

Project Area

Statewide

Implication for Management

1. Determining how incidental captures of mountain lions affect their survival rates will provide information for future furbearer trapping and mountain lion management decisions.
2. Certain trap types, sizes, or sets may be less likely to capture, restrain, or inflict injury on a mountain lion; the potential for improved methods would be valuable in developing Best Management Practices.
3. Various injuries sustained in traps will be better understood, and a decision matrix will be built by NDOW wildlife professionals, including wildlife health specialists, to determine if criteria may be developed to assist in determining when a mountain lion should be released, rehabilitated, or euthanized.

Introduction

Bobcat trappers incidentally capture mountain lions. Often mountain lions are able to pull free of these traps, but at times are restrained until released. The long term effects of being restrained in a foothold trap are not clearly understood. Data from a long-term mountain lion study conducted in Western Nevada found documented cases of mountain lion death from being captured in bobcat traps (A. Andreasen, Wildlife Conservation Society, personal communication). It is not understood if this is a common occurrence, dependent upon human densities, or an isolated phenomenon.

Methods
Using Nevada Trappers Association to increase sample size, NDOW game wardens and biologists will chemically immobilize captured mountain lions incidentally captured in bobcat traps. An ATS W500 GPS survival collar will be attached to adult individuals, pictures will be taken of the captured digit, entire animal, and area. Trap type, lure used, size, modifications, and set used will be recorded. GPS data will be used to determine survival rates of released lions. Released lions may be recaptured with hounds and immobilized to determine the status of the restrained digit, and to potentially remove the GPS collar.

Recommendations

Fund Project 36 through FY 2019. Evaluate efficacy of Project 36 annually.

Budget

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Project 37: Big Game Protection-Mountain Lions

Project Type
Management

Goal
Remove specific, problematic mountain lions to benefit game species.

Project Area
Statewide

Implication for Management
1. Lethal removal of individual lions will provide a precise tool, avoiding removing non-problematic lions while protecting reintroduced and sensitive populations.

Introduction
Hunting and conservation groups and state wildlife agencies have recognized that in some circumstances, culling of top predators is beneficial for protection of newly translocated big-game populations, small and isolated big-game populations, or big-game populations held below carrying capacity by predation (Hayes et al. 2003, Rominger et al. 2004, McKinney et al. 2006). The geographic range of mountain lions is larger than any big-game mammal in North and South America (Logan and Sweanor 2000), hence a “one-size-fits-all” management strategy is likely not applicable for mountain lions.

Methods
Working with Wildlife Services, private houndsmen, and private trappers, NDOW will specify locations of problematic mountain lions. Locations will be determined with GPS collar points, trail cameras, and discovered mountain lion kill sites.

Budget

Recommendations
Fund Project 37 through FY 2019. Evaluate efficacy of Project 37 annually.
### Budget

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<td>$40,000</td>
<td>na</td>
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</table>
Project 38: Big Game Protection-Coyotes

**Project Type**

Management

**Goal**

Conduct focused coyote removal to protect game species.

**Project Area**

Statewide

**Implication for Management**

1. Removal of coyotes in winter range and fawning areas in certain situations will provide a valuable tool for managers.

**Introduction**

Coyotes face an increase in caloric need when raising pups, both through an increase in parent energetic output and feeding growing pups. Parent coyotes have been found to be exclusively responsible for sheep predation, removing coyote pups from dens or preventing parents from breeding has been demonstrated to reduce predation on domestic livestock (Till and Knowlton 1983, Sacks et al. 1999, Seidler et al. 2014). Parent coyotes and their pups may consume a drastically different diet than their non-parent counterparts at the same time of year; this difference in diet likely requires larger prey, including mule deer fawns. Removing coyotes may increase mule deer fawn and other wildlife species reproductive output.

**Methods**

Wildlife Services and private contractors working under direction of NDOW, will use foothold traps, snares, fixed wing and helicopters for aerial gunning, calling and gunning from the ground to remove coyotes in sensitive areas during certain times of the year.

**Budget**

**Recommendations**

Fund Project 38 through FY 2019. Evaluate efficacy of Project 38 annually.
Budget

<table>
<thead>
<tr>
<th>$3 Predator Fee</th>
<th>Pittman-Robertson</th>
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PROJECTS RECOMMENDED FOR DISCONTINUATION

Subproject 22-205/207: Gabbs Valley Range Desert Bighorn Release Protection

Goal

 Decrease mortality due to predation to all age classes of bighorn sheep which will allow the population to reach a threshold where predation no longer limits the population.

Project Area

 Units 205 and 207

Implication for Management

 Remove lions that are in close proximity to recently released bighorn populations.

Conclusion

 Desert bighorn sheep population levels do not warrant mountain lion removals. Removal efforts can be reinstated through proposed project 37.

Recommendation

 Terminate sub project 22-205/207 as of 30 June 2015.
Project 29: Roadway Carrion Management to Enhance Greater Sage-Grouse Populations

Goals

1. Reduce manmade food resource subsidy availability to common ravens along roads in northern Nevada and along common raven migration corridors in southern Nevada.
2. Evaluate effects of resource subsidy availability on Greater Sage-Grouse recruitment and common raven abundance, home range size and clutch size.

Project Area

Greater Sage-Grouse range in northern Nevada and Common Raven migration corridors in central and southern Nevada.

Implication for Management

1. In areas where manmade resource subsidies for resident common raven populations are found to be a dietary factor, Greater Sage-Grouse nest success and brood survival may be optimized by strategic removal of these subsidies.
2. In areas where seasonal common raven migration corridors are found to link manmade resource subsidies to high priority resident Greater Sage-Grouse populations, Greater Sage-Grouse nest success and brood survival may be optimized in priority Greater Sage-Grouse habitats by strategic removal of these raven migration corridor food subsidies. Depending on the extent of raven migration, some of these food subsidies could be found tens or even hundreds of miles away from priority Greater Sage-Grouse habitat.

Conclusion

After one year of field work it has been determined removing road carrion is not cost effective.

Recommendation

Terminate project 29 as of 30 June 2015.
Project 30: Landfill Waste Stream Management to Enhance Greater Sage-Grouse

Goal

Reduce manmade resource subsidy availability to Common Ravens at public landfills and public dead animal pits across Nevada.

Project Area

Statewide with special focus on Greater Sage-Grouse nesting habitat.

Implication for Management

1. In areas where manmade resource subsidies for resident common raven populations are found to be a dietary factor, Greater Sage-Grouse nest success and brood survival may be optimized by strategic removal of these subsidies.

2. In areas where seasonal common raven migration corridors are found to link manmade resource subsidies to high priority resident Greater Sage-Grouse populations, Greater Sage-Grouse nest success and brood survival may be optimized in priority Greater Sage-Grouse habitats by strategic removal of these raven migration corridor food subsidies. Depending on the extent of raven migration, some of these food subsidies could be found tens or even hundreds of miles away from priority Greater Sage-Grouse habitat.

Conclusion

The majority of public landfills are permitted to remove ravens and conduct their own raven control.

Recommendation

Terminate project 30 as of 30 June 2015.
Project 33: Bi-State Sage-Grouse Nesting Habitat Restoration

Goal

Increase carrying capacity and reduce predation via restoration of several hundred acres of high priority Bi-State Sage-Grouse nesting habitat to good or excellent condition.

Project Area

Sweetwater, Pine Grove and Wassuk Ranges of Lyon, Douglas and Mineral counties.

Implication for Management

Bi-State Sage-Grouse populations would benefit from a greater abundance and higher quality of unfragmented sagebrush steppe habitat in the Pine Grove, Sweetwater and Wassuk ranges of Western Nevada.

Conclusion

Previous and currently allocated funds have yet to be spent on this project. Other federal aid dollars exist to fund this project need be.

Recommendation

Terminate project 33 as of 30 June 2015
# Overall Budget

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<thead>
<tr>
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<td>Project 21: Greater Sage-Grouse Protection (Raven Removal)</td>
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<td>Subproject 21-02: Raven Removal and Greater Sage-Grouse Nest Success</td>
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<td>Subproject 22-01: Mountain Lion Removal to Protect California Bighorn Sheep</td>
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<td>Subproject 22-14 Coyote Den Density Effects on Mule Deer Fawns and Other Wildlife Species</td>
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<td>Subproject 22-074: Mountain Lion Removal and Diet Analysis for the Protection of Rocky Mountain Bighorn Sheep</td>
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<td>Project 25: Coyote Diet and Habitat Selection</td>
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<td>Project 32: Mountain Lion, Black Bear, and Mule Deer Interactions</td>
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<td>Project 35: Using Genetic Testing to Identify Origin of Red Fox</td>
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<td>Project 36: Determining Fate of Incidentally Captured Mountain Lions</td>
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Literature Cited


Appendix
http://www.ndow.org/Public_Meetings/Commission/Agenda/